Paper

JUNE 22, 1950

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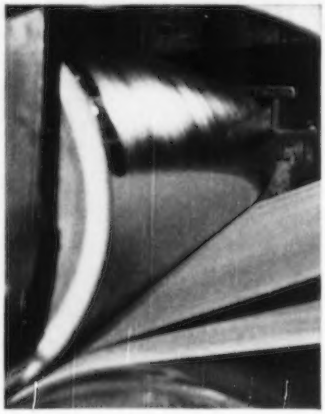
- Less Down-Time
- Increased Production
- Greater Profits

In one mill after another, Downingtown Suction Press Rolls have proved that vertical water removal pays off in longer felt life, less down-time, and higher machine speeds. Plain press rolls extract the water horizontally, forcing it back through the web of paper and the felt, against the direction of the run. This disturbs the formation, and tends to fill up the felt. Mill data show clearly the advantages of the suction method.

For example, before a recent installation on a Harper-type Fourdrinier, the top speed on 12-13 lb. napkin stock was 450 FPM, because crushing and pin holes developed at the press when this speed was exceeded. A 22-inch rubber-covered Downingtown Suction Press Roll permitted operation at 700 FPM, and gave a 90% increase in felt life. No other changes or additions were made to the machine. Forming and drying capacities limited the speed to 700 FPM—not press capacity.



Efficient vertical water removal shown by absence of water at incoming side of press

In another mill that is producing facial, a Downingtown Suction Roll allowed a speed increase from 700 to 1200 FPM. Again press was not the limiting factor. Prior to the installation, felts had to be washed three times each 24 hours. Felt life average was seven days. Since installation, no washing of felts during runs is required, and felts now average 16 days, a life increase of well over 100%, at an increase of 70% in speed.

These are not exceptional cases, but are exactly the kind of results you can expect in your mill. We'd like to tell you more about Downingtown Suction Press Rolls and the rest of our complete line of suction equipment. Write us.

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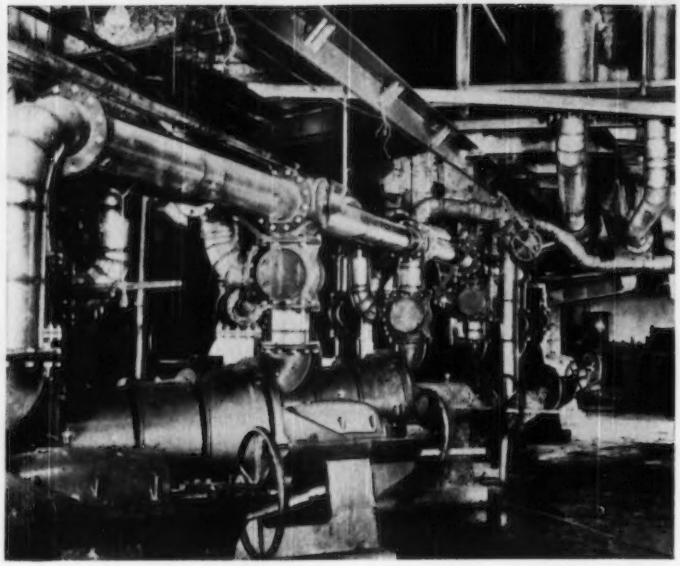
SERVING INDUSTRY . . . WHICH SERVES MANKIND

A Monel stock line installation at the River Raisin Paper Company, Monroe, Mich. These fabricated Monel stock lines run from jordan engines to rear of solid Monel headbox on a board machine. Fabricated by BROWN-HUTCHINSON IRON WORKS, Detroit, Mich.



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Keeping slime and fibre accumulations from forming in stock lines can be expensive . . . but many leading mills have proved that it need not be.

The simple fact is—*stock lines and fittings* made of "35" Monel® will not promote fibre accumulations or slime.

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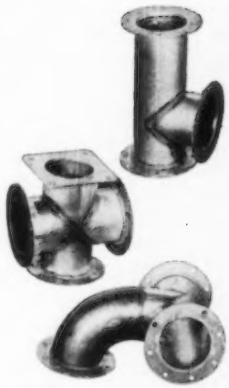
Take the first step towards lower maintenance costs in your plant by writing today for further information about money-saving Monel stock lines and fittings.



Fabricated Monel Elbows and Tees, used with Monel stock lines. Fabricated by BROWN-HUTCHINSON IRON WORKS, Detroit, Mich.

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Paper TRADE JOURNAL

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PUBLISHED EVERY THURSDAY

LOCKWOOD TRADE JOURNAL CO., INC., 15 West Forty-Seventh Street, New York 19

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Secretary

VOL. 130 **JUNE 22, 1950** **NO. 25**

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DATES TO REMEMBER

JUNE 23-24: Joint N. E.-Maine-N. H. TAPPI, Wentworth by the Sea, N. H.

JUNE 25-26-27: Empire State TAPPI, Thousand Islands Club, Wellesley Island, N. Y.

JUNE 26-28: New England Industrial Wastes Conference, Massachusetts Institute of Technology, Cambridge, Mass.

JUNE 25-29: Forest Products Research Society, Annual Meeting, Portland, Ore.

JUNE 26-30: American Society for Testing Materials, 53rd Annual Meeting, Chalfonte-Haddon Hall, Atlantic City, N. J.

SEPTEMBER 5-9: Sixth National Chemical Exposition, Chicago Section, American Chemical Society, Chicago Coliseum, Chicago, Ill.

SEPTEMBER 11-23: 6th Educational Graphic Arts Exposition, International Amphitheatre, Chicago, Ill.

SEPTEMBER 14-17: American Pulp & Paper Mills Supts. Convention, Ottawa, Ont., Canada.

OCTOBER 2-5: Fifth Engineering Conference of the Pulp and Paper Industry, Netherland Plaza Hotel, Cincinnati, Ohio.

DECEMBER 3-6: American Institute of Chemical Engineers, Annual Meeting, Neal House, Columbus, Ohio.

THIS WEEK

Why are Purchasing Agents Responsible for Only 31% of All the Buying in This Industry? Read "Who Buys?" by Henry J. Perry.

A New Miracle Packaging Material." "The Use of Polyethylene as a Paper Coating," by L. M. Burgess.

Disc Refiners Can Help Solve Your Problems of Fiberizing, Strength Development and Dirt Disposal. Read "The Use of Disc Refiners in the Sulphite Mill", by Lee E. Eberhardt.

Bids and Awards for the Government Printing Office.

NEXT WEEK

"Portable Chipper In Woods Operations", by C. G. McLaren and Marlowe P. Burgy.

"Production of Neutral Semi-chemical Sulphite For High Grade Book Paper", by L. W. Murtfeldt.

"The Production and Refining of Semi-chemical Pulp For Corrugating Board", by J. E. Sapp.

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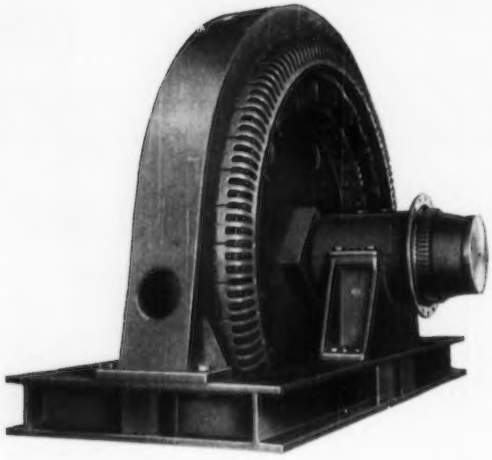
Save on original costs

use G-E synchronous



You'll save money in many applications when you specify General Electric synchronous motors. The chart shows (ratings above the black line) the applications where synchronous motors (including control and exciter) have a lower first cost than any other kind of motor. And even in cases where there is no original saving (between red and black lines) you can save on over-all cost by specifying synchronous motors to increase operating efficiency and improve power factor.

When you specify G-E synchronous motors, you get application engineering by experts in the electrical problems of *your* industry. You get the motor that gives you greatest return on your investment.

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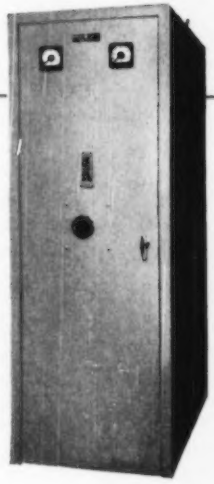
Control..GEC-505



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New rotor field circuit provides accurate field application—motor is protected against starting shock.

New rotor field circuit keeps constant check on motor performance and, on pull-out, field is removed before first slip cycle is completed—to protect against electrical and mechanical damage.

In addition to the protection offered by the new rotor field circuit, the **new, smaller air-break Limitamp controller** provides fast-acting EJ-2 Fuses that limit short circuits to less than one-half cycle for motors up to 5000 volts.

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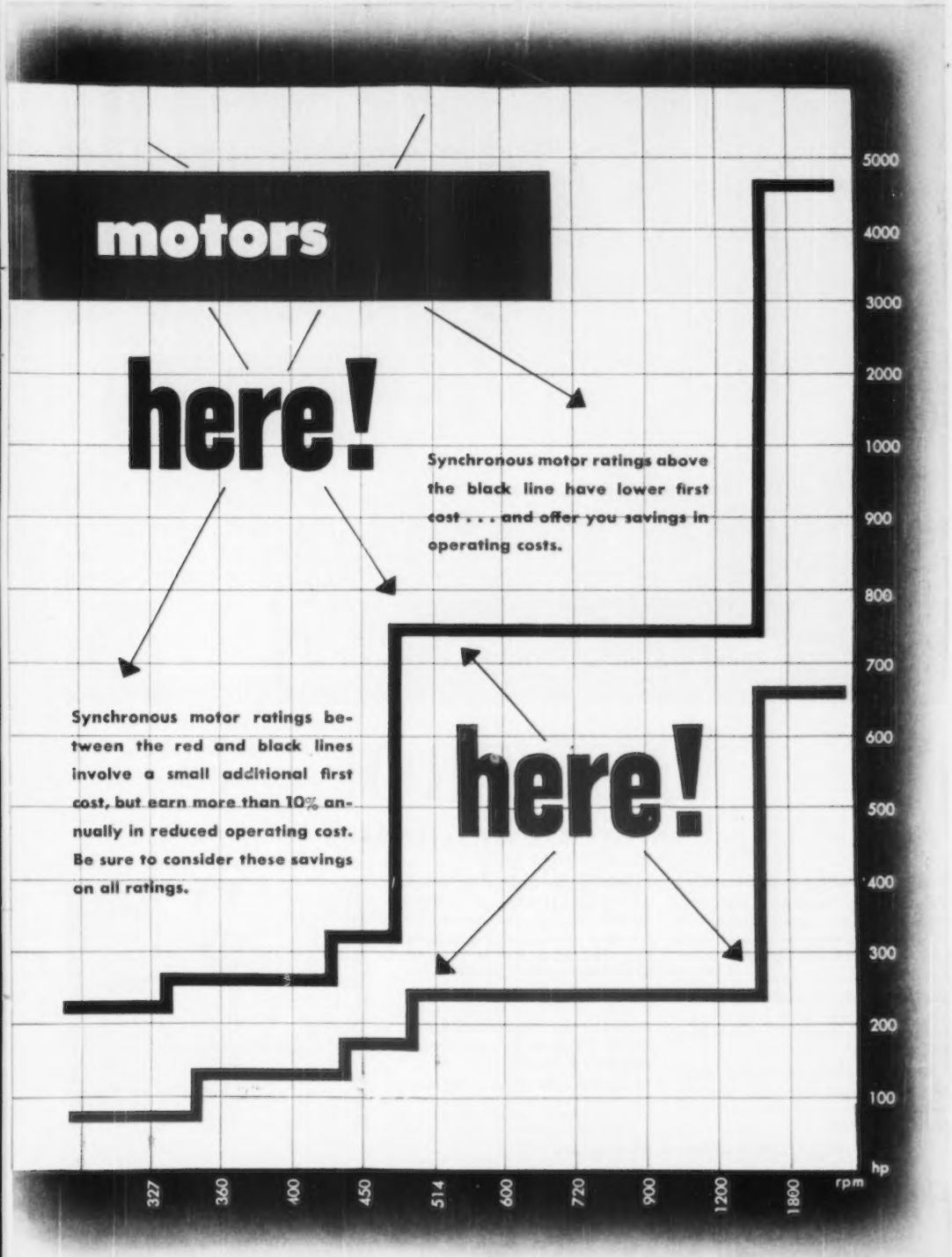
GENERAL ELECTRIC


motors
here!
Synchronous motor ratings above the black line have lower first cost . . . and offer you savings in operating costs.
Synchronous motor ratings between the red and black lines involve a small additional first cost, but earn more than 10% annually in reduced operating cost. Be sure to consider these savings on all ratings.
here!
5000
4000
3000
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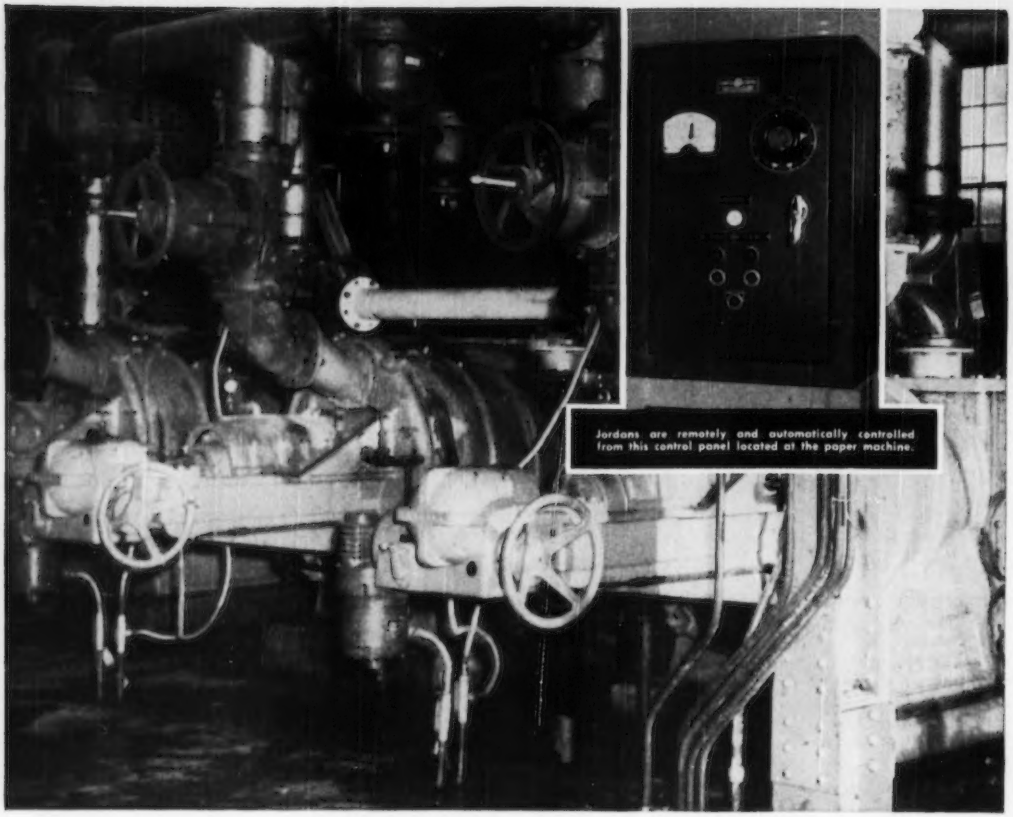


Jordans are remotely and automatically controlled from this control panel located at the paper machine.

DUOTROL

ON FIVE CROSSETT JORDANS

With Duotrol on five jordans at Crossett Paper Mills, any appreciable variation in the density or flow of stock through them is indicated on the control board at the wet end of the paper machine.

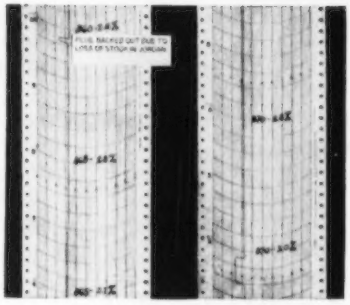
Not only are such variations in stock flow or density indicated on the board, but the plugs of the jordans are automatically set up or backed off to compensate for the change.

Thus any pre-determined plug setting is maintained with only slight variations and thus a more uniform treatment of the fibers is obtained.

Duotrol can be installed on any make, type or size jordan and on HYDRA-FINERS; also on other conical refiners.

Duotrol merits the consideration of every mill superintendent interested in more uniform jordaning and Hydrafining, with either a reduction in his time cycle or an improvement in his sheet tests. Appreciable savings in power and avoidance of excessive filling wear are also worth while considerations.

An important safety feature of the Duotrol is the pressure control which automatically backs off and protects the jordan plug in the event of temporary stock failure. Compare the charts.



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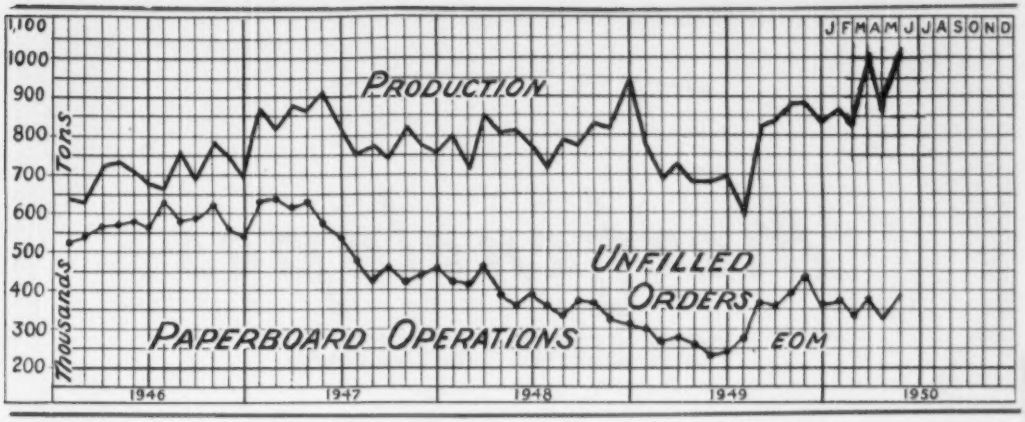
OUR BUSINESS



Source	Production	WEEK ENDING June 10, '50	May 13, '50	June 11, '49
APPA	Paper Production percent 6-day Capacity	102.6	102.4	82.3
	Unbl. Kraft Paper Production percent	96.4	97.0	62.0
NPA	Paperboard Operating Ratio percent inch hours	94.0	93.0	65.0
		Apr. 1950	**Mar. 1950‡**	**Apr. 1949**
APPA	Paper Production* (Except Newsprint and Building Papers) ....Tons	774,000	837,187	664,594
	New Orders ....Tons	779,500	854,627	634,122
	Unfilled Orders ....Tons	543,100	532,750	347,140
	Shipments ....Tons	768,000	840,905	664,179
		May 1950‡	**April 1950**	**May 1949**
NPA	Paperboard Production ....Tons	1,031,369	824,397	692,300
	New Orders ....Tons	1,091,175	809,870	686,700
	Unfilled Orders ....Tons	395,483	343,709	238,700
	Our Customers Activities Index[1]	**Latest Mo.°**	**Previous Mo.°**	**Year Ago°**
FRS	Manufactures Total Index	191	189	190
	Durable Mfg. Index	211	204	221
	Nondurable Mfg. Index	175	176	164
	Chemical Products Index	250	250	248
	Mfg. Food Products Index	148	145	145
	Printing and Publishing Index	169	167	156
ODC	Magazine Advg.-Printer's Ink Index	328	330	350
	Retail Sales Combined Adjusted Index	303.8	306.1	302.0
	Drug Index	220.2	220.7	225.2
	General Merchandise Group Index	291.3	297.0	289.9
	Grocery and Combination Index	377.3	368.3	367.1
	Prices Index			
BLS	Consumers Price Index[1]	167.0	166.5	169.5
	Wholesale all Commodities[2]	152.6	152.7	158.4
	Wholesale Foods[2]	155.5	156.7	162.9
	Commodities other than Farm Products and Foods[2]	146.0	145.9	150.7
	Wholesale Pulp and Paper[2]	155.5	155.6	167.2
	Purchasing Power of Dollar, Consumers Prices[1]	59.9	60.1	59.0
	General Activity Index			
FRS	Mfg. Production-Worker Payroll	330.1	329.2	332.8
	Unemployment Compensation Initial Claims (M)	1,294	1,240	1,458
	Miscellaneous Carloadings–Thousands of Cars	1,688	1,297	1,743
	Electric Output (Million KW hr.)	31,864	28,789	29,514
PTJ	Average 32 P & P Common Stocks as of June 13	$34.58	$33.97	$23.18
	Average Indicated Dividends Common Stocks as of June 13	$ 2.32	$ 2.29	$ 2.19

[1] 1935-39=100 Unadjusted Index
[2] 1926=100
* For details see APPA Monthly Statistical Summary--April 1950 Estimated Figures
° Latest Month Available on Request
‡ For Five Weeks

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Cleans Pipes
Kills Bacteria
Reduces Washups
Cuts Slime Rejects

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230 Park Avenue, New York City

Paper TRADE JOURNAL

TRENDS

Office of the PAPER TRADE JOURNAL,
Wednesday, June 21, 1950

New Pulp Prices Jell

Market pulp prices for the third quarter have jelled, some ten days earlier than usual. With a promptness which confirms the strength of the world pulp market, most major sources had announced their prices by the 20th.

Domestic producers—U. S. and Canadian—which in 1949 supplied 96.7 percent of U. S. market pulp used in paper and board manufacture, have lifted their sulfite prices $4 to $7 a ton. (U. S. bleached sulfites moved upwards from $118 to $122/$123/$125. Canadian grades are $125.) All Canadian unbleached sulfites are reported at $107, a rise of $7. The new grade of U. S. semi-bleached is priced at $112. All these quotations are on a delivered basis.

The newborn strength of unbleached kraft in world demand is demonstrated in third-quarter prices. Canadian grades which were $82.50 in late May, strengthened to $85 on June 1, go to $95 on July 1. Other northern krafts range to $105 with varying transportation allowances. Southern grades are being chewed up for integrated production, and only token amounts are spoken of at $90 and $95, rises of $7.50 and $10 respectively. Domestic bleached krafts are priced upwards from $4 a ton—western, southern type—to $5.50 for Canadian, and $11.50, western, northern type.

Bleached sodas are $120/$122; groundwoods, $65; glassines move in parallels to sulfites.

Swedish producers, which in 1949 supplied 1.97 percent of U. S. market pulps, and who affirm their intent to supply their market here, will meet contracted requirements at prices below those of the world market, it is reported. (See *Trends* of June 15.)

Bleached kraft prices range from $134/$137 delivered to $130/$132.50 on dock Atlantic ports, a rise of $9/$11 per ton. Bleached sulfites, delivered basis, are $125/$128, a rise of $7/$10. Unbleached krafts also are strong at $90 on dock, $96.50/$97.50 delivered, a rise of $7.50 for OD prices and $10/$11 for delivered. Unbleached sulfites meet the Canadian price and range from $100 on dock to $107 delivered, a rise of $7 per ton.

Norwegian mills, which supplied .02 percent of U. S. consumption in 1949, have not completely announced prices. One high quality bleached kraft is priced at $129 on dock; and some bleached sulfites are reported in competitive range with domestic and Canadian grades.

Finland, which accounted for 1.08 percent of U. S. 1949's consumption, is quoting on dock prices to its customers. These are reported to be in competitive range grade for grade.

Spot Market Is Bare

With the exception of small lots of Austrian unbleached sulfites which range from $100 to $105 by grade, the spot market is bare. Importers speak of the bare world cupboard and wail that there is no pulp to sell. Any lots which materialize will be at nominal prices.

World Market Reports

Growing world demand for paper, by-product of world reconstruction, is creating unusual conditions for supplying countries. Root of the problem lies in the restricted yield of Scandinavian forests which were overcut during war years. There isn't enough pulp to meet world markets and their own domestic demand. Added difficulties come from world-wide dollar shortages which make soft-currency trading a necessity.

A British journal speaks of a "paper famine" and reports its Government's proposals to increase production of strawboards to help cure the headaches in packaging. Says the editorial in *World's Paper Trade Review:*

"No let up has yet appeared in the stringent paper situation, which is not confined to this country alone. Delivery dates are being constantly advanced, running now into 1951. Merchants and consumers alike are clamouring for supplies, but they meet with little satisfaction. Coated papers are among those which are especially difficult to locate. Newsprint, as evidenced by proceedings in Parliament, is equally scarce, and to relieve the position dollars have had to be released to enable 25,000 tons to be brought from Canada in the second half of this year. It seems somewhat ironical that newsprint mills in this country at one time found that product such a drug on the market that they were forced on to other qualities. Now that lost tonnage would be extremely useful.

"The present tightness of paper is described as phenomenal. Even Sweden, where paper production is a main industry and where it was so extravagantly used not so long ago, is in much the same position; and a recent effort to secure a certain quality of printing paper for an inquirer in the U. K. was made in vain. In the meantime, orders come in from overseas, and our exporters are at their wits end to know how to deal with them."

The writer speaks also the the firmness in wood pulp and inability to get wanted supplies from Sweden. "When Sweden finds it necessary to buy pulp from the Continent in order to meet home requirements for paper," he comments, "the extraordinary position is made apparent."

Svensk Pappersmassetidning writes of the "pronounced shortage of unsold pulp, especially of bleached qualities." As a matter of fact, there is hardly any more bleached paper cellulose to be had for delivery in 1950, a market situation which is causing "trouble for Swedish paper and board mills which are wholly or partly dependent on market pulp, and many of them now find it very difficult to cover their requirements."

Paper Prices in Modest Rise

Hourly reports indicate that paper prices are being lifted at about the same "reasonable" rate as domestic pulp prices, i.e., $5/$7 a ton. To press time, the shape of things to come was that fine sulfite papers would take a 4 to 6 percent rise effective immediately. Machine coateds, glassines, tags also are reported to trend upwards. One or two mills set a July 1 dateline, but since they are unable to take on more orders, no advantage has accrued to the merchant. Business is unusually heavy, even for these, its good months, the trade indicates. Inventories are not aggregating. One large house reports an inventory drop during the last six months. Since the mills are sold well ahead, the increase in buying which accompanies a rising market cannot be a factor.

Finnish Wage Agreement

A report on Finnish wage agreements is quoted by International Monetary Fund's *Financial News Survey*. "A recent agreement between the Government and the trade unions in Finland is reported to provide for a 15 percent increase of wages and restoration of the tie between wages and the cost of living, which was abolished last January. For every 6 percent increase in the cost of living index, an increase of 6 percent in wages will be made mandatory. . . . It is estimated that the 15 percent wage increase will raise the total wage bill by 35 billion markkas." (Sources: Neue Zürcher Zietung, Zürich, Switzerland.)

Materials

Casein.—Prices on domestic product ease 1 cent. Market steady, demand active. Supply adequate. High grade Europeans reported in good supply.

Chlorine. — Price advances become effective July 1. Seasonal water demands accentuate tightness of supply.

Rosins. — Some strengthening noted pricewise as G grade rises 11c and H to K lift 5c.

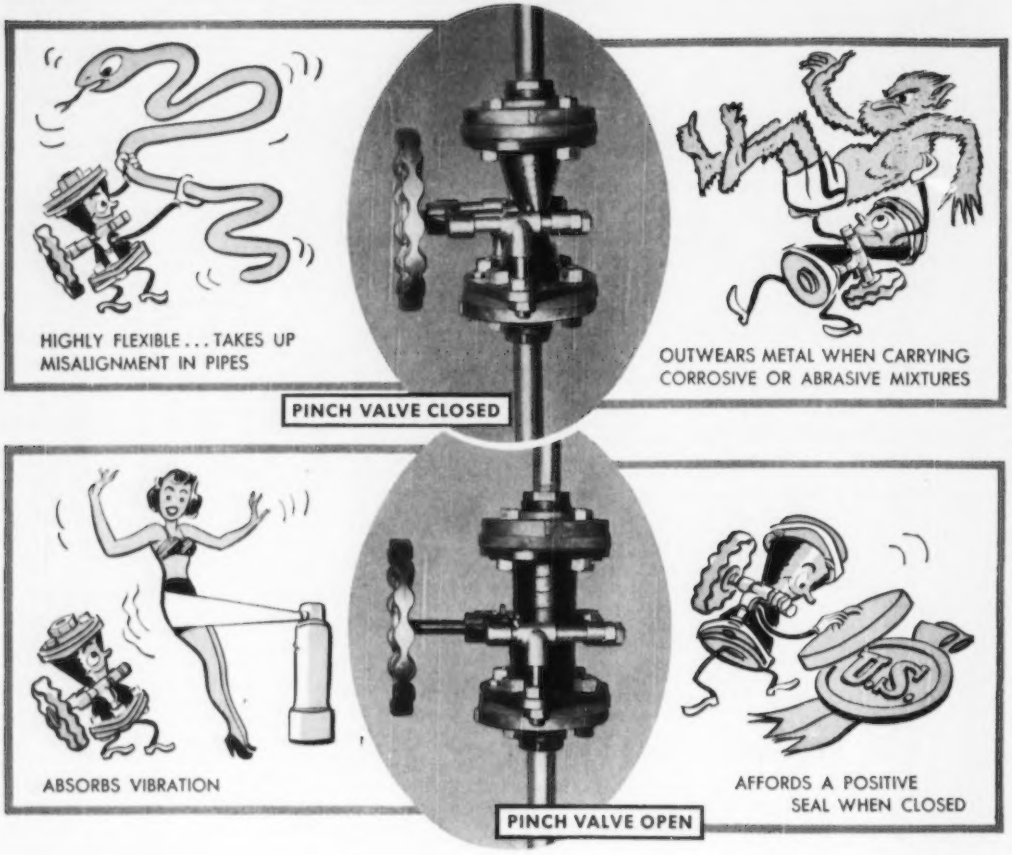
WASHINGTON—Paper mills in Brazil are among rosin-consuming industries in that country expected to feel a growing rosin shortage, according to advices received from American sources at Rio de Janeiro. It was originally expected that supplies would be received from France and Sweden adequate to demand, but only limited shipments arrived from France, and latest information was that Sweden would not make shipments until 1951. This may result in efforts to obtain rosin in this country, it was thought.

Paperboard Production (Tons)*

	June 19 1950	June 3 1950	June 11 1949
Production	214,497	192,563	165,729
New Orders	225,548	254,251	153,108
Unfilled Orders	400,731	395,683	272,243

Source: NPA.

NEW PINCH VALVE SQUEEZES OUT NEW PAPER PRODUCTION ECONOMIES


HIGHLY FLEXIBLE . . . TAKES UP MISALIGNMENT IN PIPES
PINCH VALVE CLOSED
OUTWEARS METAL WHEN CARRYING CORROSIVE OR ABRASIVE MIXTURES
ABSORBS VIBRATION
PINCH VALVE OPEN
AFFORDS A POSITIVE SEAL WHEN CLOSED
U.S.

FUNCTIONS—For use on pipe lines carrying paper stock and raw chemicals. Eliminates "water hammer." Breaks up galvanic action in pipe lines. Can be operated partly open to control flow.

CONSTRUCTION—Abrasion-resistant or corrosion-resistant compounds, or neoprene for oil resistance, or butyl rubber for high heat and severe acid conditions, or pure gum stock for food and beverage conveyance.

MAINTENANCE—Can be refitted to new valve bodies, reducing replacement costs. No packing or repacking needed. Compact design, with mechanism, retaining rings and pinch valve body in a single unit—an advantage where space is limited.

Let this new valve reduce your operating costs. Write to address below.

PRODUCT OF
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UNITED STATES RUBBER COMPANY

MECHANICAL GOODS DIVISION • ROCKEFELLER CENTER, NEW YORK 20, N. Y.

News of the Week

Paper TRADE JOURNAL

To Operate Bromptonville Mill

OTTAWA—Richmond Pulp & Paper Co., a new organization, is expected to begin operations at the plant of former Brompton Pulp & Paper Co. at Bromptonville, Que. The plant has been closed down since May, 1949 and the mill as well as water rights were sold to the City of Sherbrooke for $725,000, though the city authorities made it clear at the time that the plant would be resold. Subsequently, the buildings were optioned for $400,000 to a U. S. firm, Reliance Enterprises Inc., which has formed Richmond Pulp & Paper Co. to operate the mill.

In addition, the company has also leased the 10,000 hp power plants for a ten-year period.

Gene H. Kruger and B. G. Kruger, of the Kruger Paper Co., of Montreal, are understood to be in control of the new company, with the former as head of the new organization. With a rated capacity of about 17,000 tons of newsprint a year, disposal of the mills' production is expected to be quite easy under prevailing heavy demand for newsprint.

Duncan Bay Mill Plans Progress

VANCOUVER, B. C. — H. J. Mackin, president of Canadian Western Lumber Co., recently issued a further assurance that plans were being proceeded with for the erection of the proposed $40 million pulp mill at Duncan Bay, near Campbell River, B. C. Mr. Mackin said a great many people would like to know when the project was being started. He said he was not prepared to give the date at which it would be commenced, but that his company was definitely going ahead with the plans.

Two years ago Canadian Western Lumber Co. received the first forest management license issued on Vancouver Island and at that time announced it would proceed with the erection of a pulp and paper mill to cost $25 million. Later the project was expanded to the $40 million figure.

Under the terms of its forest management license the company will work 60,000 to 75,000 acres on a sustained-yield basis as well as salvaging timber waste from large areas already logged.

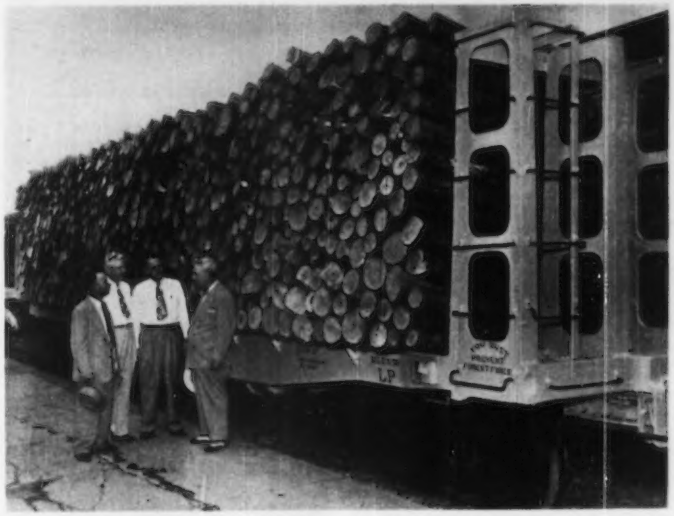
American Box Board to Build

GRAND RAPIDS, Mich. — A new $1 million plant is to be built by the American Box Board Co., in Grand Rapids, starting August 1, according to Walter S. Goodspeed, president of the firm, who added that "all facilities for production of corrugated and fiber shipping containers for Michigan will be concentrated in the new plant."

The new plant will be built with emphasis on proper lighting, temperature and humidity control, etc., will be one-story in height, and will cover an area of approximately five acres. Increased capacity for production of all items, and an anticipated increased business volume constitute the reasons for the new plant.

The folding paper box division will be accommodated with 100,000 square feet more of working area, and will be furnished with box-making equipment permitting such operations as making in one piece the large boxes required by the furniture industry.

This marks the fourth major expansion of the firm since 1942; the other three involved purchasing of plants.



The G. M. & O. Railroad has put in service a new all cast steel pulpwood car. The capacity is 22 cords compared to the old style 15 cords.

New Bird Mill In Full Production

SHREVEPORT, La. — The Shreveport roofing felt mill of Bird & Son, Inc., only an engineer's plan and a draftsman's blueprint in January of last year, is now a full operating unit of the Bird organization and the third felt mill in Louisiana. Other roofing felt producers in the state are the Ware Cotton Batting Co. and the Flintkote Co., both of New Orleans.

When the first saleable felt was completely processed at 11:50 p.m., November 30, it fulfilled the boast last spring of Vice-President Ralph A. Wilkins that he would have the mill operating by December 1, two months ahead of the scheduled date of completion. Ground for the new mill had been broken on February 1, 1949.

Costing close to $2 million, the new plant will manufacture a felt base for the building materials made by the adjacent Bird roofing mill. The new mill is a one-story structure of steel frame, brick and asbestos covering 35,000 square feet.

The felt mill is under the direction of Vice-President Wilkins, who is in charge of all paper and felt operations of the company, which also has plants at East Walpole, Mass., Chicago and Phillipsdale, R. I.

Locally the plant is operated by L. L. Williams, southwestern manager, superintenent B. P. Soward and assistant Neill McNeill. The same foreman and other supervisory personnel will be used to operate both the new felt mill and roofing mill.

The compact plant utilizes six water wells on Bird property which furnish 500,000 gallons of water per day, while a special railroad siding was built for the unloading of rags, wood and paper from which the felt is made.

The P. H. Glatfelter Co. and the Barton, Duer & Koch Paper Co. were hosts to a group of Baltimore printers at Spring Grove on June 15th. After a trip through the pulp mill in the morning, lunch was served at the Lake Club. Following lunch, all departments of the paper mill were visited. A steak roast at the Lodge completed the day's program.

Mac Millan Tune-Up Operations

VANCOUVER, B. C.—Tune-up operations commenced early in June at the new pulp mill of the H. R. MacMillan Export Co. near Nanaimo, B. C. The running period for tune-up will last until mid-August, at which time production of unbleached sulphate pulp will be commenced. The bleaching unit is under construction and will start production in late November.

Fraser Places Pulpwood Orders

OTTAWA—Fraser Co.'s new mill at Newcastle, New Brunswick, has placed orders reportedly for 75,000 cords of pulpwood at reported price of $17 a cord delivered to railway cars.

This order, together with reports of improving export business, are expected to provide a big boost for the pulpwood operations this season in New Brunswick.

Mando Changes

MINNEAPOLIS, Minn.—The election of J. B. Faegre as president and C. T. McMurray as executive vice president of the Minnesota and Ontario Paper Co. has been announced by R. H. M. Robinson, Chairman of the Board of Directors.

Mr. Faegre, who has been associated with Mando since 1930, succeeds Donald D. Davis, who died June 7. The new president has been a director and member of Mando's Executive Committee since 1941 and will continue the practice of law as senior partner in the firm Faegre & Benson.

Mr. Faegre is a director of both the Minnesota and Ontario Paper Co. and The Ontario-Minnesota Pulp and Paper Co., Ltd.

C. T. McMurray, newly elected executive vice-president and director, joined the organization in 1918 as assistant purchasing agent. After serving as resident manager of the International Falls and Fort Frances operations from 1931 to 1936, he was successively appointed assistant director of sales, assistant to the business manager and chairman of the paper sales committee. Since 1941 he has been vice-president in charge of sales and a member of the Operating Committee. As executive vice-president, all of the company's sales and operations will be under his direct supervision.

J. B. Faegre
President

Appointments announced by Mr. McMurray include the promotion of J. B. Norman as general manager of the National Pole and Treating Division, succeeding G. H. Ramsey who is presently ill. Formerly Director of Purchases, Mr. Norman is succeeded by K. F. Speelman, Stores Supervisor of the firm's International Falls, Minnesota Division.

Changes in Mando's Canadian subsidiary, The Ontario-Minnesota Pulp and Paper Co. Ltd., as announced by C. Larson, vice-president in charge of production, include promotion of J. F. MacKellar, formerly resident manager of the Fort Frances, Ontario Division, to the position of vice-president and general manager; E. E. Crandall, formerly Kenora, Ontario plant manager, to resident manager of the Kenora Division. S. C. Stratton, formerly vice-president and resident manager at Kenora, is transferred to International Falls as assistant chief engineer with engineering responsibilities with respect to the company's three main pro-

C. T. McMurray
Exec. Vice-Pres.

duction operations. The transfer of D. D. McRae, assistant secretary-treasurer of The Ontario-Minnesota Pulp and Paper Co. Ltd., from Kenora to Fort Frances was also announced.

J. B. Norman of Minneapolis has been employed by Mando since 1923, becoming purchasing agent in 1933. He

(Continued on page 26)

J. B. Norman
Gen. Mgr., National Pole & Treating Div.

"Without Stainless Steel it would be impossible to produce paper at today's prices"

That's what a prominent mill manager said recently. No wonder equipment made from Stainless Steel is becoming more and more indispensable in pulp and paper mill operations.

Throughout the plant, wherever you put U·S·S Stainless to work, you'll realize important savings from its unequalled resistance to the corrosive action of pulps, paper mill stocks and white waters, caustic liquors and cleaning solutions. Its ability to prevent contamination and discoloration . . . its long service life under severe mill conditions are additional benefits that help to reduce production costs.

Digester linings of U·S·S Stainless Steel sheet eliminate frequent, costly relining. Heat exchangers and evaporator tubes of U·S·S Stainless Steel offer a service life many times that of other materials. U·S·S Stainless Steel wire and cloth in washers, thickeners, cylinder molds and filters give years of service instead of months.

These are only a few of the money-saving applications of U·S·S Stainless Steel in modern paper mills. It's safe to say you can profit from using Stainless Steel wherever you need high corrosion resistance, structural strength with light weight, and freedom from stock discoloration.

But be sure that it is U·S·S Stainless Steel that you use. U·S·S Stainless Steel is available in sheets, tubing, wire, strip, plates, bars, pipe and special sections—all in a wide range of compositions that have been thoroughly tested in pulp and paper mill applications. When you specify U·S·S Stainless, you can count on a material designed specifically for the job it must do.

AMERICAN STEEL & WIRE COMPANY, CLEVELAND
CARNEGIE-ILLINOIS STEEL CORPORATION, PITTSBURGH
COLUMBIA STEEL COMPANY, SAN FRANCISCO · NATIONAL TUBE COMPANY, PITTSBURGH
TENNESSEE COAL, IRON & RAILROAD COMPANY, BIRMINGHAM
UNITED STATES STEEL SUPPLY COMPANY, WAREHOUSE DISTRIBUTORS, COAST TO COAST
UNITED STATES STEEL EXPORT COMPANY, NEW YORK

Workmen are erecting this Stainless Steel Smithlined acid storage tank for a large paper mill. The tank was fabricated by the A. O. Smith Corporation, Milwaukee, Wisconsin.

USS

U·S·S STAINLESS STEEL

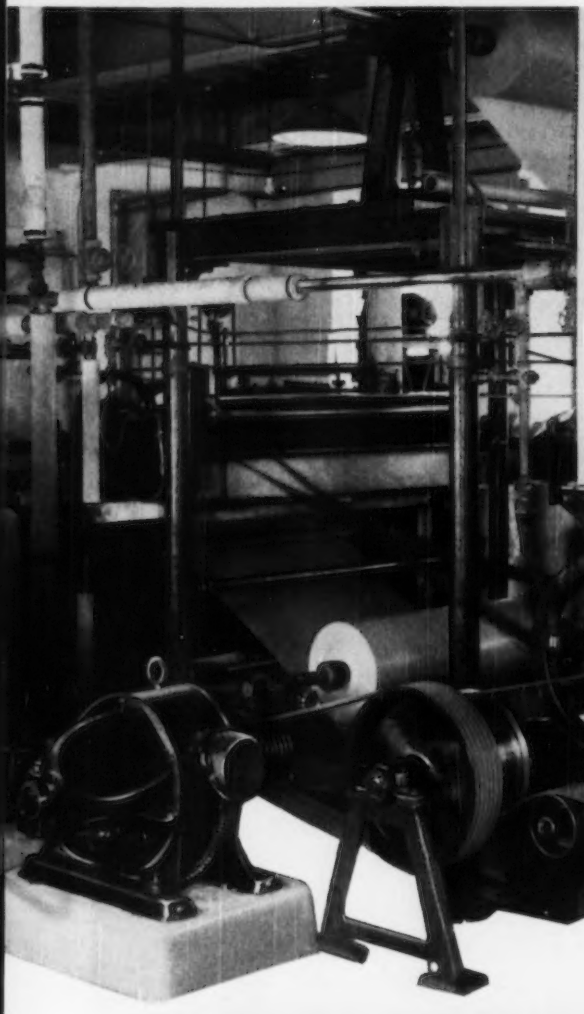
SHEETS · STRIP · PLATES · BARS · BILLETS · PIPE · TUBES · WIRE · SPECIAL SECTIONS

O-1329

UNITED STATES STEEL

YOU CAN BE **SURE**.. IF IT'S

Westinghouse



Typical Paper Industry Applications for Westinghouse Packaged Drives

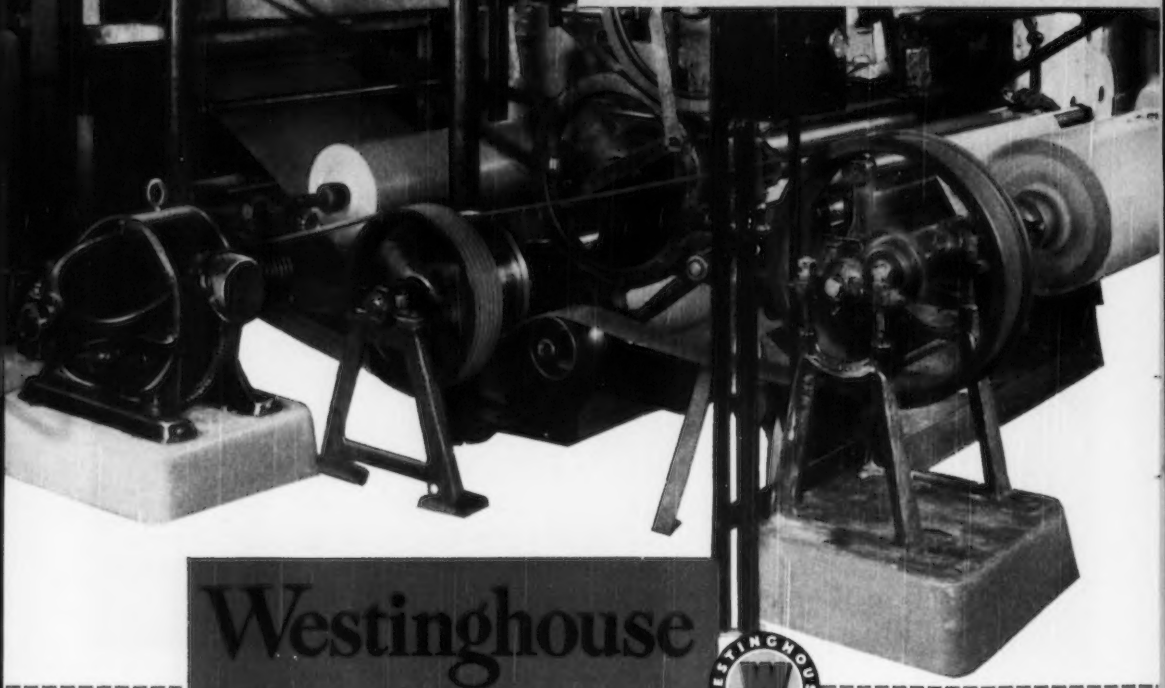
Although packaged, Westinghouse factory-built drives are made by a "building-block" method that permits many optional features. These include: stepless, time-limit acceleration and deceleration, precision speed regulation, IR drop compensation and extra exciter capacity for multimotor drives.

As a result, Westinghouse Packaged Drives are adaptable to many papermaking auxiliaries, as well as converting and finishing machinery.

Some of the tried-and-proved applications in the Paper Industry are:

Winders • Shakes • Rotary Cutters • Pulp Washers • Wet Machines • Printing Presses Special Converting and Finishing Machines

If you need an adjustable speed drive, Westinghouse Consulting and Application Engineers will gladly investigate your processes and recommend the packaged drive best suited to your requirements.



Westinghouse

EQUIPMENT FOR THE PAPER INDUSTRY

YOUR CHOICE

of Packaged Drives with Westinghouse

For many paper machinery applications requiring a packaged drive, the improved performance desired can be obtained by using the type having an M-G set. Other machines require the all-electronic type for top performance.

With Westinghouse, you can have your choice:

AV Life-Line Packaged Drive. This drive, using an M-G set, gives adjustable speed control up to a range of 16 to 1. It is a simple, factory-wired package housed in one self-ventilated cabinet. It is economical in every way—first cost, installation, power consumption, maintenance and floor space.

Mot-O-Trol. This packaged, all-electronic adjustable speed drive is designed for use with those machines that require extreme speed ranges up to 100 to 1, or precise speed regulation to as little as plus or minus ½%. Its heavy-duty components and simplified circuits assure trouble-free service under difficult mill conditions.

Both drives give you fast, smooth operation of those machines for which they are made. Each one is backed by Westinghouse unified responsibility for complete drive performance *as a drive.*

Besides drives—packaged and tailor-made—Westinghouse makes a complete line of electrical equipment for the Paper Industry. No matter what your needs, Westinghouse can supply them. Call your nearest Westinghouse District Office, or write to Westinghouse Electric Corporation, P. O. Box 868, Pittsburgh 30, Pa. J-94798

ESSENTIAL ELEMENTS OF WESTINGHOUSE PACKAGED DRIVES

This compact, freely-ventilated cabinet for the AV Life-Line Packaged Drive houses the complete power unit. The motor-generator set for power conversion, dynamically balanced to eliminate vibration, is rubber mounted in lower compartment. Cooling air for the M-G set is drawn through filters which are easily replaced.

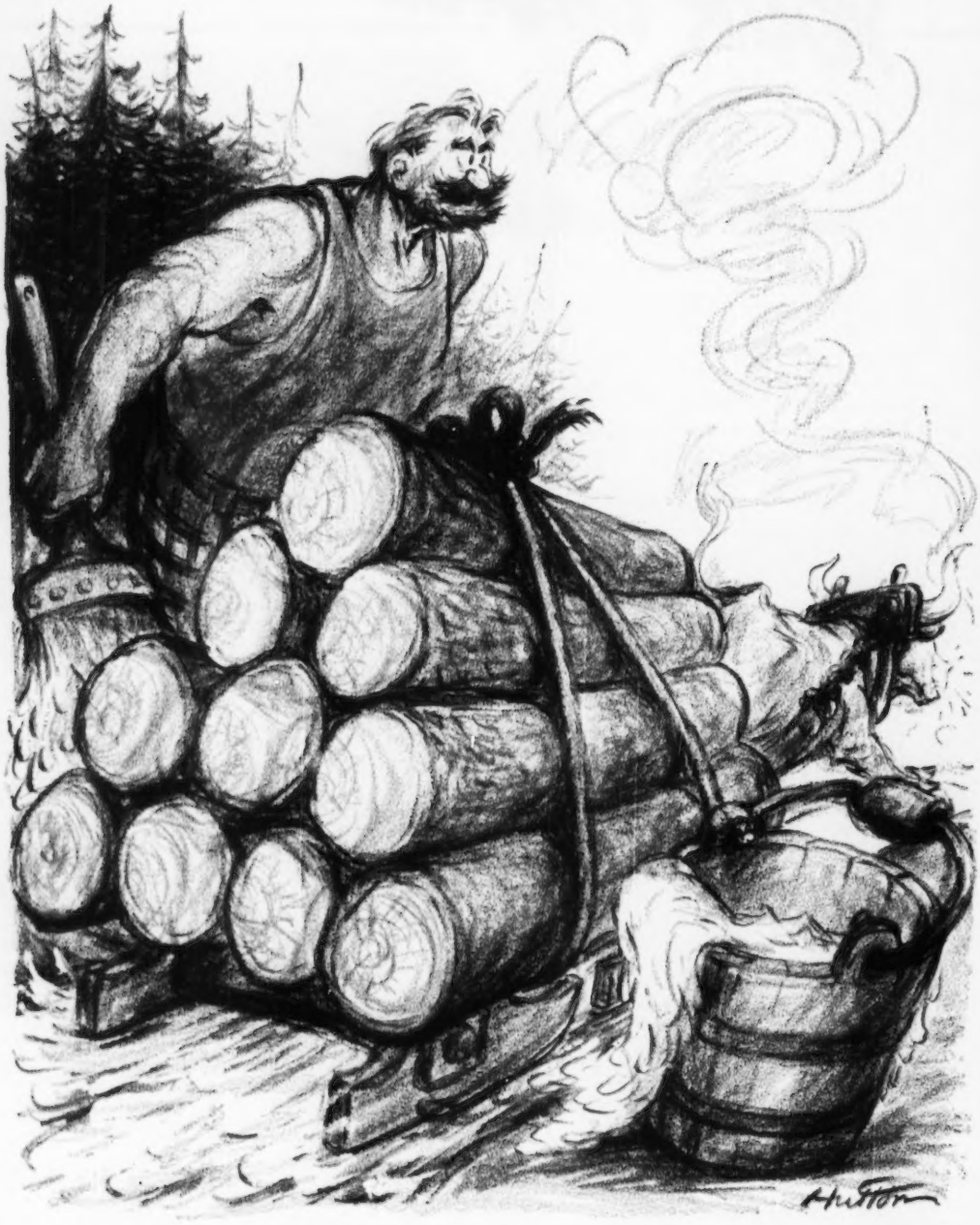
Motor and control for either drive. Motor is standard SK Life-Line, d-c motor with bearings which require no lubrication. Operator's station with combined start-stop push-button and speed control knob—an exclusive Westinghouse feature—can be installed where most convenient. Reversing and inching are optional.

This is the self-ventilated Mot-O-Trol cabinet, containing all necessary circuits for the complete control of motors. Because of simplified circuit design, Mot-O-Trol has fewer tubes, potentiometers, resistors, capacitors and Rectoxes than any similar equipment. Rugged, industrial components resist vibration and give longer life.

THE MEAD SALES COMPANY
230 PARK AVENUE, NEW YORK 17, N. Y.
20 NORTH WACKER DRIVE, CHICAGO 6, ILL.

MEAD
pulp

DISTRIBUTORS OF WOOD PULP
BLEACHED AND UNBLEACHED
CHEMICAL AND MECHANICAL WOOD PULP



Babe, the blue ox, hated hot weather and refused to haul logs in summer. So Paul Bunyan whitewashed Skid Road—and Babe, thinking the whitewash was snow, hauled willingly and with great vigor.

A reproduction of this incident from the fabulous life of Paul Bunyan—the fifty-second of a series—will be sent on request. It will contain no advertising.

Who Buys?

HENRY J. PERRY
Editor, Paper Trade Journal

It has often been said during the last few years that salesmen fall into two classes.

1. Those who have started during the "sellers' market" and have never learned to sell, and

2. Those who had to learn to sell in order to eat, who have since died, retired or become sales managers.

The same condition may exist for purchasing agents. There are:

1. Those who bought from anyone, under almost any condition, anything they could get, and who are waking up suddenly to find that the buying has actually by-passed them and they have become mere routine order signers.

2. The class to which you belong, namely those who know the importance of their work; have sold their companies on sound buying; have cultivated good will for their company; and are a credit to their profession.

It is our intention to examine this critical function of all business and see if we can find some ways to improve it; we may be able to take home a few helpful ideas. Possibly we may start a little self criticism for the benefit of ourselves.

You represent the purchasing function of the country's 6th largest and probably most essential industry. For the past thirty years 60 percent of its sales dollar has been spent for raw materials, supplies, fuel and power.

We are currently buying more than $2½ billion worth of commodities, ranging from million dollar paper machines to toothpicks.

We consume 10 percent of all chemicals. We are the fifth largest chemical customer, the third largest power consumer, the largest industrial power producer, the second largest buyer of wood, and so it goes. We are a sizeable factor in every field of manufacturing and supply.

There are many slogans going the rounds these days for the coming decade, the "Thrifty Fifties" and the like. Regardless of what you call it, sales ability and buy ability will be major factors in our success in business.

Sometime ago I tried to develop the theme that everyone is a part of the sales force. You are as important as any salesman in our industry for he can't sell anything until you have bought the materials, at a competitive price, and delivered them to the plant for conversion.

You are as much a part of the sales team as he is.

Now where do the buyers stand in the scheme of things to come? We can only judge by looking at the record.

In the pulp and paper industry many factors come into play: absentee ownership, manager ownership, and a vastly growing technical knowledge changing us over from high degree of manual skill to a complex technical process.

In 1927, *Paper Trade Journal* made a survey of "Who Buys." It showed that owners, officers (such as vice-presidents, secretaries, and treasurers), bought 57 percent of all supplies, equipment, materials, etc.; purchasing agents bought 24 percent; general managers and superintendents bought 13 percent; engineers and technical men bought 6 percent.

Today we have no actual survey in our industry and so we must turn to "The Survey of Industrial Buying Practice" published by the National Industrial Advertisers Assn. We can use its summary, for this industry is no different than all other industry.

This 1949 report shows that top management, the owners, officers, etc., bought 11 percent; operating management, general manager, superintendent, etc., bought 27 percent; purchasing agents bought 31 percent; engineers and technical men bought 26 percent; all others bought 5 percent.

These figures, as crude as they may be, show that as we have grown in size and technical complexity, we have definitely shifted our buying responsibilities.

From this we can see that operating management has increased its buying power nearly double, engineers and other technical men over four fold while the professional purchasing agent has only increased about 20 percent. In fact, you can say that the P.A. has just stood still.

The question is, Why?

Some of the answers, for there are many, are quite obvious.

Lack of technical knowledge in face of the growing technical requirements; the organization of multi-plant corporations with complex organizational set ups; reciprocity; red tape; negative buying; and very probably the old theory that to be a good buyer you have got to be a tough guy.

From many comments from suppliers, we can see what others think of this buying function.

Several have said that the place to make the sale is to the mill personnel. Once that is done, there is nothing much more to do as the purchasing department will follow through with the order. Aside from an occasional courtesy call, the buyer is almost totally ignored.

Go to almost any industrial convention, the suppliers salesmen outnumber the industry men at least 3 to 1 especially when it is a technical or operating association.

Keen sales managers are just making the most of their opportunity to cultivate good will, through entertainment and good fellowship, among those who have purchasing influence.

Another recent survey by the Water & Sewage Works Manufacturers Assn. showed that those attending their exhibits preferred to have the suppliers send men who were qualified to discuss technical problems, rather than salesmen, since these operators were there to learn the answers, and if they got competent assistance at a convention it would have a marked influence on the equipment purchased.

We are faced from the suppliers standpoint, with what might be called negative buying. In this case, the suppliers sales force is trying to promote a new item or make a new contact. After the usual pleasantries, the salesman tells his story and receives the stock answer. "I don't know where we could use your stuff, nice of you to come in, come again when you have something we could use," and out the door the salesman goes, only to find out after he has gone in the back door, that his product is just what engineering or operations were praying for. You may say why doesn't that dumb chemist or super tell me. He can say with equal vehemence, why didn't the stupid P. A. call me in on it. But you have been damaged in the eyes of the salesman. He will try that back door next time, and with some justification.

There is another justified complaint instead of stock answer number 1, stock brush off number 2 is used "Send us a sample for our lab. We will try it out on test." Weeks go by and no report. Finally a report comes back in an indifferent style. The salesman may be doubtful as to proper testing procedure. His conclusion will be, why bother with the P. A., I'll take it to the laboratory myself where we can discuss this item intelligently. You are thus hurt again.

Consider the growth of the sales service staffs of your suppliers. A major part of their job is to know the operating and technical men and their problems, and carry the information back to their own technical staffs. A multi barrelled research gun aimed on your problem. If it did not pay the supplier, he would not offer this service. You have got to learn to use it.

Another factor adversely affecting your position is the insidious problem

Given before Paper Group, National Association of Purchasing Agents, Cleveland, Ohio, June 12, 1950.

of reciprocity. Its growth is increasing as our industrial units increase in size.

From the National Conference Board Report 33, "Purchasing for Industry" it appears that this practice is not as common with us as in some of the other industries. However, about 50 percent of all pulp and paper companies regardless of size, use this two edged weapon and in the larger ones it is almost universal practice.

Many people have commented on this buying method if it can be dignified by calling it buying, as being alright when all conditions are equal. That would appear to be a stupid justification. Anyone, where all conditions are equal, would buy from a business friend, certainly you don't buy from your enemies. What kind of a friend is it that sells you on any basis but merit.

How far this practice can degenerate is included in the above report, from which I quote. "Reciprocity is a satisfactory policy if the price premium is not excessive and quality is consistent with competition."

The Federal Trade Commission holds a dim view of special discounts and it is entirely possible that they would be equally oppressive on the payment of special premiums. If not, the stockholders should be, for it shows a weakness in management and sales.

Among other effects of this un-American practice are that top management and the sales department are doing the buying and you are being short-circuited. It demonstrates that your products are not competitive either price wise or in quality.

As yet I have not found a P. A. who favors reciprocity.

One paper company salesman said that he loved it as he could concentrate on competitive customers, because he never had to worry about price or service to reciprocity customers.

A supplier salesman said he was greeted by this, "your product looks good, the price is right, let's see how much you bought from us. Nothing, last year, you had better see your own purchasing department before you call me again."

Another case cited, was where operations called in a sales service man for help. The problem was solved with a new product, several ton lots were bought; paper company sales were happy until they learned from the reciprocity supplier that their own products were out until reciprocity was restored. It was, the new product discontinued, operations got back its headache, quality deteriorated to its previous lower level.

Reciprocity not only eliminates competition but is actually holding back technical progress and quality improvement.

We have some idea of what others think of the buying habits of the pulp and paper companies.

Many of these faults are top management errors, or sins. Any management consultant will tell you that more effort is placed on devising sales policies and operating procedures than on any other function. They will also say that there is a great opportunity to make money in buying, shipping, accounting and even material handling when these functions are properly administered.

Consider that 60 percent of your sales dollar is spent for various commodities. Your company has very little control over labor rates; it has no control over taxes; little control over fixed charges. Can it adopt any other buying policy than—

The highest required quality at the lowest possible price.

Now what more can we do about this state of affairs?

We have got to remember that many management men view buying as still in the horse and buggy days and little realize what your brand of professional purchasing can do. You have got to show them.

It would be easy if we could turn to a Business Administration text book and find the job descriptions and organizational chart required, but we have got to be practical.

For the sake of argument let's start by analyzing the activities of your own department, the people in it and above all your own actions. You will be amazed at what you find you are doing. You will be able to make worthwhile improvements. You may find you are spending time on details which may be handled by an assistant even better than you can do it yourself.

With your own house in order and only then, can you study the buying activities of other groups in your own organization. You may find that a chemist is spending hours per week searching for materials which you can locate as a routine matter. He may be buying commonplace materials such as size, alum or colors, which require little technical skill after a specification is given you.

It is very possible that from this study you will find many places where sizeable savings can be made not only in money but valuable time.

How often do you pass along to the other executives in your company your analysis of present market conditions and for the immediate future.

Your company may have a consulting economist. Maybe he can forecast the things to come from charts and graphs. You are in the marketplace where the information comes from to make these charts. Who can know more about it than you? Your company profits may depend upon it.

Possibly some think that it is necessary to be a politician, engineer, transportation expert, salesman, chemist, statistician, economist, lawyer, to really do the job. It would help, but even chemists are specializing these days so you cannot expect to know it all. When you want help call for it.

What about the staff under you? How much time do you spend teaching them what is going on in your company and why?

I have often thought that every buyer should try selling and vice versa. Definitely you should know some of the production headaches first hand.

Again for arguments sake, you should have someone in a small company and possibly a staff in a big corporation thoroughly familiar with your company's sales development, research, and operations, who knows what these complex problems are, men who are working on them. This man should go out searching for new equipment, new materials, new processes for strange as it seems selling is not always effective either, and you should not wait to be told.

This is your job, it is up to YOU to sell your management that YOU can do it, and that you MUST do it.

YOU must have the proper assistance; the proper liaison between finance, operations, engineering, quality control and all the other services, to do the job effectively. YOU must be top management.

You have a further job which you have got to sell and it is to your suppliers. It is that YOU are the headquarters for information about your company, what it buys, what it makes, and what it is likely to need.

YOU can supply all the information the suppliers want wrapped up in one package, quickly, completely and at one stop.

In conclusion, this complex organism which we call modern business must review some of its war-born sloppy practices.

MANAGEMENT MUST MANAGE
OPERATIONS MUST PRODUCE
SALES MUST SELL
THE TECHNICAL SERVICES MUST FUNCTION WITHIN THEIR SPHERE
BUYERS MUST BUY

To the degree that these functions are diluted and delegated to others, so will your chances of success be diluted and the opportunity be given to your competitors to succeed.

Let our motto be the "Effective Fifties."

G.P.O. To Purchase Newsprint Yearly

WASHINGTON, D. C. — Under new procedure recently adopted by the Congressional Joint Committee on Printing, the Government Printing Office this year will purchase newsprint on a yearly basis instead of at 3-months' intervals as previously.

Bids have been asked for 5½ million pounds of newsprint for a 12-months' period, which were to be opened June 12.

Bids on paper and envelopes will continue on a 3-months' basis as at present.

The Use of Disc Refiners in the Sulphite Mill*

LEE E. EBERHARDT[1]

In recent years, revolving disk mills have found increasing acceptance in the field of fiberizing, strength development and dirt dispersal. They are employed in this field not only for ordinary strength developing purposes in direct competition with beaters and jordans, but also to achieve certain effects and pulp qualities for which the traditional refining equipment has never proved adequate. Then too, for a considerable number of end products, there are many indications that optimum refining is achieved by a combination of disk mill and jordan treatment.

Little is known concerning what happens to pulp in a beater, jordan, disk mill or other refiner; that little is chiefly descriptive and of the nature of an art. In the case of the revolving disk mill, it is presumed that the refining action is accomplished by a combination of rolling, rubbing, and violent turbulence. The evidence is that such a mill, when compared with a bar or a knife-action refiner, does little cutting of the fiber. Probably it is for this reason that a pulp refined to a given bursting strength in a disk mill usually is freer, bulkier, and has a higher tearing resistance than the same pulp prepared in a beater or jordan to the same mullen strength.

Design and Operation

The general design of modern disk mills is illustrated in the accompanying illustrations.

Figure 1 illustrates a "single disk" mill. Chips or other fibrous materials are fed in at the center of the mill. Fiberizing is effected as the materials pass outwardly between a revolving disk and a stationary plate for purposes of construction, the stationary plate may comprise part of the case, or it may be held by a non-rotating disk.

In the "double disk" machine, both disks revolve; but in opposite directions. In the machine shown in *Figure 2*, the raw material is fed into the fiberizing zone of the mill through the spokes of one of the rotating disks. However, the feeding may be effected through a hollow shaft. This same type of construction can also be used in a single disk mill *(Figure 1)*.

The clearance between plates is adjustable. In the units illustrated in *Figures 1 and 2*, the micrometer dial mechanism permits the distance between the disks to be controlled by increments of 0.001 inch up to three inches. Actual operations generally require settings in the range of 0.000 to 1.00 inch clearance.

Actual designs of various makes of disk mills may depart radically from the designs indicated by *Figures 1 and 2*. For example, the shaft may be vertical, and time of retention of material between the disks may be regulated by pressure devices. However, all disk mills incorporate the simple basic ideas as brought out in these two illustrations.

Usually the disks and the stationary heads are provided with plates which may be replaced when worn. These plates do the actual refining job. They are designed for a variety of applications. They involve an endless variation of groove and tooth pattern and dimension. Sometimes they are available in the form of full circles. Generally, however, they are produced in segments constituting one-third or one-sixth of a circle. A few representative patterns of many plates in current use are illustrated in *Figure 3*.

Choice of Equipment

As previously suggested, our scientific knowledge of fibers, and of the effect of mechanical treatment on pulp, is too meager to serve as a basis for choosing the equipment best suited for a specific stock preparation job. Any selection of a refiner, and any recommendation of optimum conditions for the use of that refiner, must be predicated upon actual experience with a commercial sized machine. There are so many influencing factors in both design and operation to do otherwise. Each factor has some important effect upon the efficiency of operation and upon the quality of product. The quality can vary widely in accordance with different treatments.

Among the principal variables are: (1) number of rotating disks (one or two), (2) rate of power application, (3) speed of rotation, (4) consistence of feed, (5) pattern of fiberizing plates, (6) distance between the plates, and (7) precision of construction.

The effects of some of these varia-

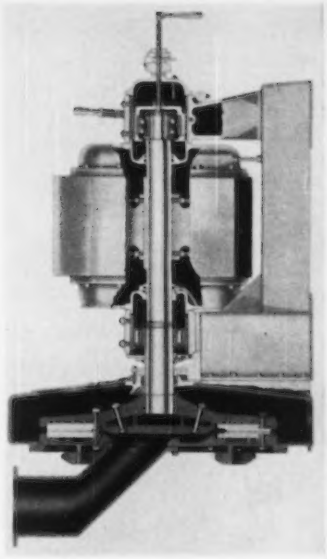
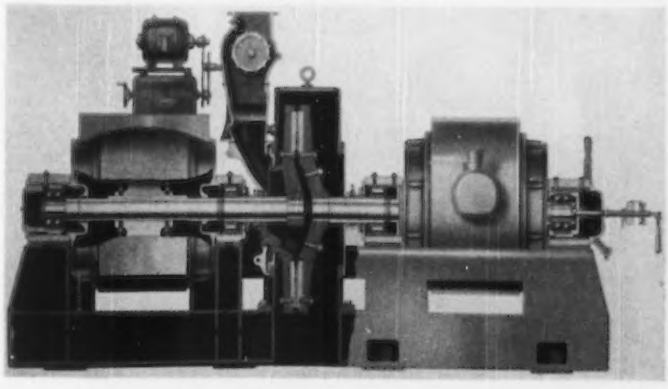


Figure 1

Figure 2



* Presented at the Annual Meeting of the American Pulp and Paper Mill Superintendents Assn., Chicago, Ill., June 8-10, 1950.

[1] The Bauer Bros. Co., Springfield, Ohio.

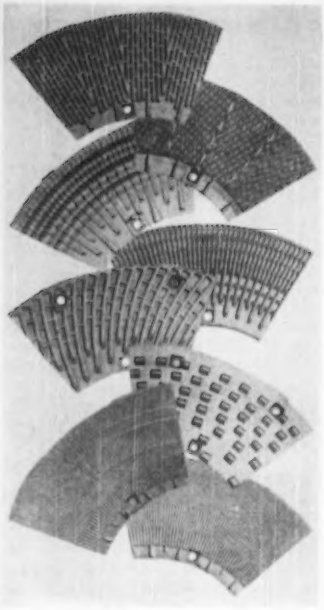


Figure 3

bles are only partially understood. We lack the data and the theory needed to permit a prediction of the net effect of the combined factors upon the quality of product obtainable.

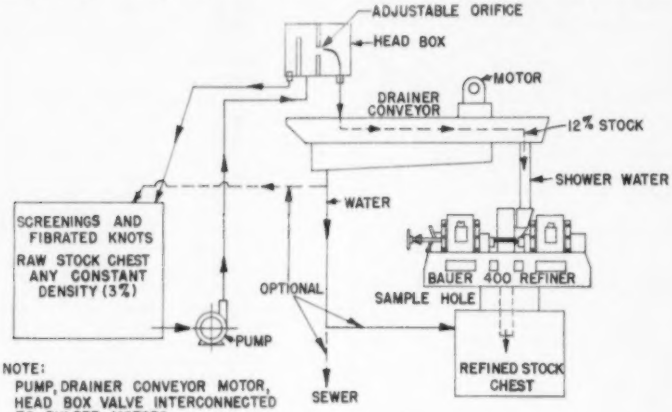
The choice of proper design of machine and the selection of preferred processing conditions must depend upon actual experience in preparing a specific type of pulp for a definite end use.

The best experience is that gained in a producing mill under actual operating conditions. This approach, however, is entirely too costly except for a final demonstration after the main points have been cleared by a less expensive investigative procedure.

The only reliable substitute for actual mill experience is a specific experiment in laboratory equipped with a full-size revolving disk mill. A miniature disk refiner does not produce the same refining effect that is obtained with a full-size or commercial unit. The situation is similar to that which obtains between miniature and commercial beaters and jordans.

Disc mills or refiners of both single and double rotating disc designs have been applied very effectively on a variety of uses in sulphite mills. These applications may be separated roughly into the following categories: (1) preliminary treatment of chips, (2) preliminary treatment of pulp, (3) semi-chemical pulps, (4) screenings and rejects refining, (5) stock preparation (including dirt dispersal), and (6) laboratory applications.

In practically all sulphite mills, chip screening normally is one step in chip preparation, that of chip screening to reduce the chips to a uniform material for charging to the digesters. This operation separates the uniform material from the oversize material and the sawdust. The quantity of oversize material varies widely. It is dependent primarily on the efficiency of the chipping operation.



SCHEMATIC DIAGRAM
(FOR)
REFINING SCREENINGS & KNOTS

Figure 4

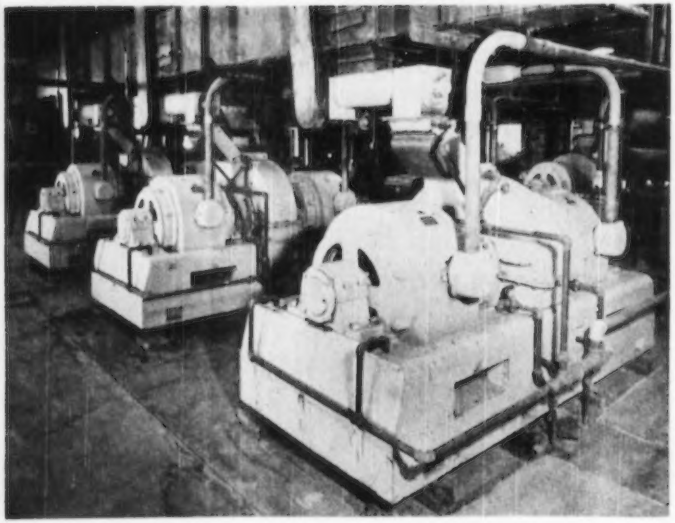


Figure 5

A single disc mill, equipped with coarse breakdown fillings or plates, can be used very effectively to reduce the oversize screen rejects for re-screening. The disc mill is better adapted to this service than the conventional hammermill or shredder. The material produced in a disc mill does not contain the sawdust and fines such as are produced by the chopping and cutting action of hammermills and shredders. The disc mill produces some fines, but they are of a fibrous nature, and can be cooked to produce good pulp.

Mitscherlich sulphite mills, and some mills cooking high yield pulps, encounter trouble at times in reducing cooked chips to a condition suitable for pumping to the screening operation. This trouble can be eliminated by giving the pulp and chips a light breakdown treatment in a disc refiner using coarse plates.

TABLE I

Double Disc Pulper Performance on Sulphite Rejects from Knotters and Fine Screens

Sample No.	WT4-O1	WT4-O5	WT4-A1	WT4-A2	WT4-A3	WT4-A5	WT4-A6
Material	Fine Screen Rejects	Screened Sulphite Pulp	Pulp from Fine Screen Rejects by Bauer Fiberizing			Pulp from Knotter Rejects by Bauer Fiberizing	
HP used per ton per day	.	....	15.2	10.3	7.2	10.0	7.2
Capacity of pulper with 300 motor HP	....	....	19.7	29.1	41.4	29.9	41.9
Freeness, Canadian Std., cc.	665	591	68	335	446	186	306
Mullen test, %	....	36.9	84.4	78.0	77.0	41.7	40.5
Tear test, %	....	102	112	134	144	90	90

Semichemical pulping has been covered very effectively in the literature by Rue, Wells, Rawling, Staidl, Chidester, McGovern and others. The subject is also on the agenda of this meeting; so this paper will not go into any detail on the subject. It should be pointed out, however, that some type of mechanical refining is required in the semichemical process.

The double rotating disc refiner is the proven and accepted mill for this use in the more modern semichemical plants in the industry today. *Figure 4* indicates a typical disc refiner installation in such a plant.

Screenings always have presented a disposal problem to most mills. In earlier periods the screenings either were dumped to the sewer, burned, hauled away, or refined in makeshift equipment at hand and used in lower grades of paper and board. Stream pollution, acute wood supply problems and necessity of maximum utilization of fibrous materials have changed the screening situation. It now becomes a refining and utilization problem that mills cannot afford to overlook.

Both knotter and fine screen rejects can be utilized in lower grades of paper and board very economically. In some cases, it is possible to utilize fine screen rejects in higher grades of pulp. For example, several Canadian newsprint mills are refining their fine screen rejects and adding the rejects to news grade sulphite. Other mills are adding refined rejects to toweling and wrapper stocks; and an Eastern mill is contemplating using refined knotter and fine screen rejects in producing creped wadding.

Table 1 indicates double disc pulper performance fiberizing sulphite rejects from knotter and fine screens.

Sample WT4-05 indicates the freeness, mullen and tear of the screened sulphite pulp from which the screenings were obtained. The refined fine screen rejects in both cases indicate higher tear values and better than 100 percent increase in mullen over the screened sulphite pulp. The refined knotter rejects are slightly higher in mullen and slightly lower in tear than the screened sulphite pulp. The HP/Ton input in each case is relatively low, ranging from 7.2 to 15.2.

It should be pointed out that there is a substantial proportion of dark colored mineral matter in both classes of rejects. This material can be removed from the refined fiber by centrifuging, this resulting in improved color.

The results in *Table 1* are typical of those being obtained in more than fifteen sulphite mills in this country and Canada with Bauer double revolving disc refiners. In some cases, where smaller tonnages are involved, single and double disc refiners of smaller size are entirely adequate for the requirements on screenings refining.

Figure 5 indicates a typical schematic diagram for refining screenings and knots.

The excellent results obtained in strength development in the refining of screenings pointed toward the use of disc mills on sulphite pulp itself. Laboratory and mill investigations were made. It was found that the disc mill produced the following effects at extremely low HP inputs per ton:

(a) Mullen strength improvement with relatively small reduction in freeness and tear values.

(b) Excellent dispersion of friable dirt in pulp.

(c) Dispersion of pitch.

(d) Elimination of shives and clumps of fiber.

(e) The preceding items contribute to improved sheet formation on the paper machine.

Table 2 illustrates the results obtained in the refining of screened sales sulphite pulp from a Canadian newsprint mill. From these data it will be noted that HP inputs/Ton were relatively low-ranging from 2.9 to 6.2 HP Days/Ton. Freeness values remained high. Mullen tests increased as much as 85 percent. Tear actually increased, indicating relatively little reduction in fiber length.

Table 3 indicates results obtained in refining screened sulphite pulp from a West Coast mill in a double disc refiner. These results are quite similar to those shown in *Table 2*. However, in this case, freeness values remained very high; mullen test percent increase was as high as 108 percent and tear test values dropped off but not drastically.

A mill installation on this same pulp provided definite improvements in formation. The sheet contained less dirt, and high strength was obtained.

Mitscherlich pulp always has had a very definite place in the production of fine papers. Some mills which could use this type of pulp to advantage have hesitated to do so because of the possibility of the pulp containing too much dirt.

A Mitscherlich pulp mill installed a double disc refiner over a year ago. The results with this machine to date have been very successful. The dirt count has dropped considerably. Some reduction of pitch has been obtained. Chlorine consumption in bleaching has been reduced and shives have been eliminated. In short, this mill has established a new high quality of pulp, and has overcome the disadvantage of dirt in Mitscherlich.

This one double disc refiner, equipped with a 300 h.p. motor is handling 3 percent stock at a rate of 200 bone-dry tons per day. Samples taken before and after the refiner indicate mullen increases of 10 to 20 percent. Tear drops slightly (in one test from 165 percent to 150 percent). Freeness values commonly drop slightly. In some cases they increase 20 to 30 cc in the 650 cc Freeness range. Reasons for the freeness increase have not been determined.

A distinct change in the drainage action of the decker into which the refiner discharges takes place when the refiner is not in operation. Under such a condition the couch roll, which is driven, has difficulty in couching the pulp. However, with the refiner in

TABLE II.—Sulphite from Canadian Newsprint Mill.

Sample No.	AD-O5	AD-A20	AD-A21	AD-A22	AD-A23
HP used per ton per day	....	6.2	6.2	4.3	2.9
Capacity of pulper with 300 motor HP	....	48.5	48.4	69.2	103.8
Freeness, new green, cc.	658	616	620	617	633
Mullen test, %	26.5	49.1	45.3	43.1	45.7
Tear test, %	132	170	163	161	162

TABLE III.—Screened Sulphite from West Coast Mill.

Sample No.	WG-O4	WG-A10	WG-A11	WG-A12	WG-A13	WG-A14	WG-A15	WG-A16
HP used per ton per day	....	4.3	2.7	3.3	2.4	2.3	3.7	4.4
Capacity of pulper with 300 motor HP	....	69.3	112.0	91.0	125.0	132.4	80.2	68.2
Freeness, new green, cc.	723	671	685	676	700	680	637	653
Mullen test, %	47.4	84.5	86.2	80.0	85.2	89.1	99.0	95.6
Tear test, %	155	137	129	140	130	133	130	122

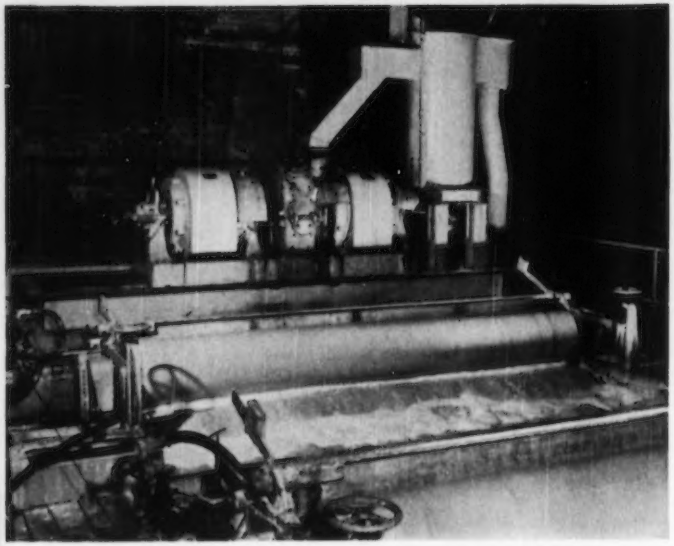


Figure 6

service, there is no such difficulty.

Figure 6 pictures this machine as installed in the mill. *Figure 7* is a simplified flow sheet of an operation of the same kind.

On applications of this type, the results obtained probably are due to high speed impact, and to the violent turbulence of the double disc refiner. It is extremely doubtful if a single disc refiner, because of its relative low speed operation, would provide similar results in the same service.

The data on screenings refining and pulp refining reveal the tonnage capacity per refiner is relatively high. In some cases, where smaller tonnages are produced, smaller disc refiners can be used. For a smaller mill with adequate storage or chest capacity, however, a larger machine can be used intermittently on two applications. *Figure 8* indicates a schematic diagram of an installation in intermittent operation on both screenings and pulp.

Some paper mills engaged in the production of sulphite grades of toilet, facial tissue and napkins have been using the disc refiner very effectively on stock preparation directly ahead of the paper machine in place of the conventional jordan. This type of application has resulted in:

1. Improvement in quality due to better, more uniform formation. Dispersion of dirt and elimination of shives.

2. Measurable improvement in color of sheet.

3. Increased machine speeds due to refining with less reduction of freeness.

4. Utilization of high percentages of hardwood sulphite pulps (in some cases 100 percent) in place of spruce sulphite.

The application of double disc refiners to the refining of stocks of this kind have been so successful that one prominent mill now has an installation of eight such units. Four of these refiners are directly ahead of the paper machines. Jordans have been eliminated completely from all phases of this operation. *Figure 9* shows an installation of this type.

Disc mills have very definite application in the laboratory activities of a sulphite mill. They are applicable to both routine testing and research problems.

Figure 10 pictures a small high-speed disc mill that is being used by many laboratories for a large variety of pulping and strength development investigations. This mill does an excellent job. However, results obtained with it are indicative only. They can be correlated with commercial size

— FLOW SHEET —

PROMINENT MITSCHERLICH SULPHITE PAPER MILL

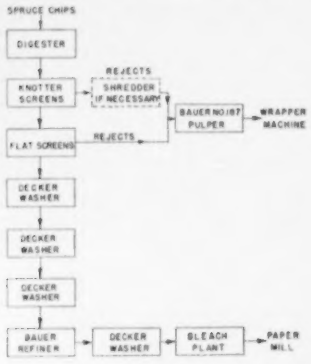
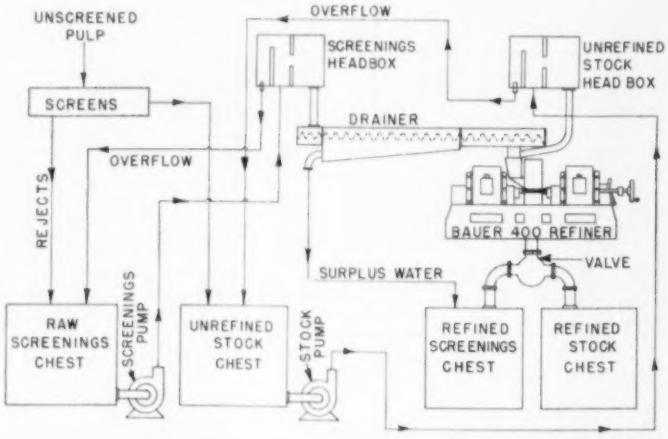


Figure 7

machines on specific jobs only after considerable comparative work.

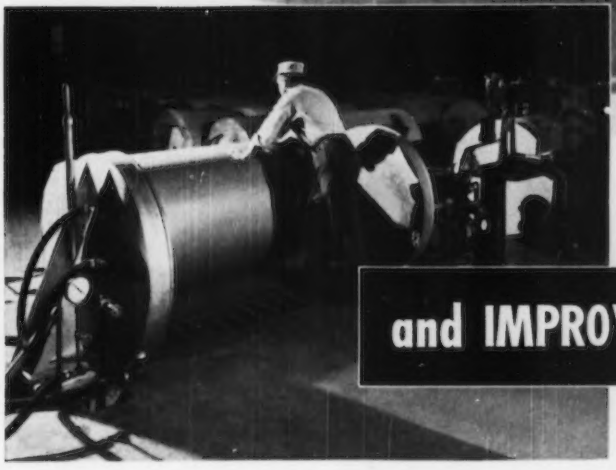
Figure 11 illustrates a variation of the disc refiner; namely, the Mead Laboratory Refiner. This machine, used only for strength development work, was developed by the research organization of The Mead Corporation under the direction of the late Dr.

Figure 8



BAUER REFINER LAYOUT FOR ALTERNATE OPERATION ON SCREENINGS & PULP

CUT LABOR COSTS

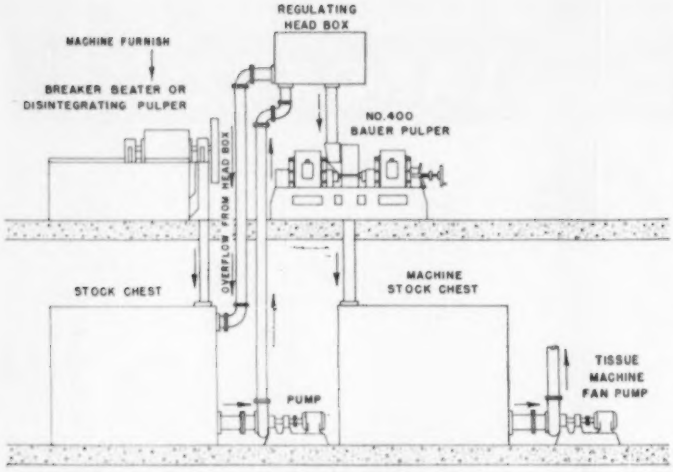


and IMPROVE ROLL QUALITY

More and more mills are doing it with . . .

THE VALLEY ROLL END PASTER

VALLEY IRON WORKS CO., APPLETON, WISCONSIN



PREPARATION SYSTEM FOR TISSUE PAPER

ALTERNATE INSTALLATION:
MACHINE STOCK CHEST CAN BE ELIMINATED BY PIPING STOCK DIRECT FROM BAUER PULPER TO MACHINE FAN PUMP.

Figure 9

Ruff. It is a small disc machine with the pressure on the stationary plate being controlled by a weighted lever. The speed of the rotating disc is 325-340 r.p.m.

The machine gives a one-time unit of refining instead of a full curve. Its charge consists of 80 grams o.d. pulp at 2 percent consistency.

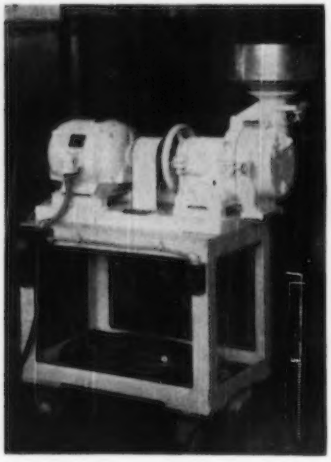


Figure 10

The rotating disc acts as a pump to bring the stock in at the center and out at the edge. The time lapse is commonly 20 seconds but it can be changed to suit individual conditions. A sulphite pulp with an initial freeness of 700 cc. will be reduced to a freeness of about 570 cc. by a treatment of 20 seconds. In treatment of 80 seconds, the freeness would be lowered to about 200 cc.

Accurate results are obtained with the refiner as duplicate tests of freeness seldom vary more than 10 cc.

The disc refiner is being applied very effectively in most phases of modern sulphite mill operation. In a competitive market, where quality production

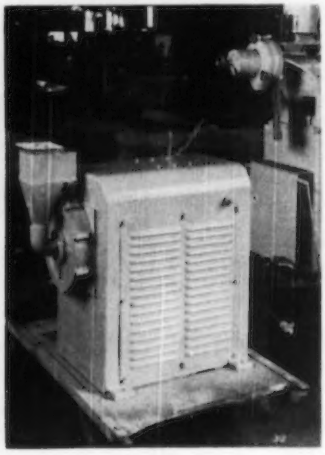


Figure 11

at lower cost becomes essential, the disc refiner plays an important role. Where declining supplies of the better pulping woods necessitates use of screenings, the production of sulphite pulps from hardwoods or semichemical pulping, the disc refiner becomes essential.

Mando Changes

(Continued from page 14)

has held the position of director of purchases since 1941. In his new position as general manager, Mr. Norman is responsible for all production and sales operations of the National Pole & Treating Division. The Division has plants at Minneapolis, Minnesota and Spokane, Wash.

K. F. Speelman, another long-time employee of Mando, began in 1914, working in various mill and engineering operations at International Falls. He advanced from storekeeper in 1933 to resident engineer and storekeeper in 1938 and subsequently held various assignments culminating in responsibility for supervision of all stores for the International Falls Division.

J. F. MacKellar, resident manager of the Fort Frances Division of The Ontario-Minnesota Pulp and Paper Co. Ltd. since 1947, started in the company's woods operations at Hudson, Ontario in 1927. He earned successive promotions in stores, cost accounting and office and plant management, serving as plant manager at Kenora for two years prior to transfer to Fort Frances.

E. E. Crandall of Kenora, Ontario, started in the local mill in 1929 as an hourly employee and earned promotion to superintendent of Groundwood Pulp production in 1932, a position he held until 1947 when he became plant manager.

S. C. Stratton supervised construction of the Kenora mill and power plants and in 1937 became assistant to the general manager of that mill. He earned promotion as general manager in 1944, and in 1945, vice-president and general manager of The Ontario-Minnesota Pulp and Paper Co. Ltd.

Fraser Vacation Notice

NEW YORK—Fraser Paper Co., Ltd. has announced their mill will be closed for vacation from July 1 to July 9 inclusive.

Resigns As ECA Head In Italy

WASHINGTON—M. Leon Dayton of Portland, Ore., has succeeded James D. Zellerbach as head of the Economic Cooperation Administration Special Mission to Italy. Mr. Zellerbach became head of the mission on its creation in June 1948. After completion of an agreed two years of service in Italy, he is returning to San Francisco to resume his duties as president of Crown-Zellerbach Corp.

Mr. Zellerbach has done an outstanding job with ECA in Rome and has helped the Marshall Plan render an outstanding service to Italy. The American Government is proud of his record. The ECA is fortunate that Mr. Dayton, who has worked closely with Mr. Zellerbach, is succeeding him," said Paul G. Hoffman, ECA Administrator.

Bids And Awards

GPO 3rd Quarter, 1950 Paper Needs

WASHINGTON — Bids were received on June 12 by the Joint Congressional Committee on Printing for paper for the use of the Government Printing Office for a three-month period beginning July 1, 1950. Awards, announced June 19, are indicated by asterisks (*) before the names of the successful bidders in the tabulation herewith.

Newsprint

12 months contract: 5,500,000 lbs., 24x36—64; rolls, 19, 24, 36, and 48 ins. wide, 36 inches in diameter (3-inch fiber cores).
Stanford Paper Co. ..... .0663c
(2,400,000 lbs. only)
Great Northern Paper Co. ..... .05025c

Machine-Finish Book

No. 5—800,000 lbs., 25x38—70; flat, cut any size, min. width 21 ins., max. width 48 ins.
Mudge Paper Co. ..... .0983c
(400,000 lbs. only)
Stanford Paper Co. ..... .103c
Barton Duer & Koch Paper Co... .101c
*Frank Parsons Paper Co. ..... .0981c
No. 6—100,000 lbs., 25x38—70; rolls, 28½ ins. wide, 36 ins. in diameter (3-inch fiber cores).
*Mudge Paper Co. ..... .0879c
Stanford Paper Co. ..... .089c
Barton Duer & Koch Paper Co... .0922c
Walker Goulard Plehn Co. ..... .0949c
Frank Parsons Paper Co. ..... .0881c
No. 7—550,000 lbs., 25x38—70; rolls, 19, and 38 ins. wide, 36 inches in diameter (3-inch fiber cores).
Fitchburg Paper Co. ..... .0997c
*Mudge Paper Co. ..... .0879c
Stanford Paper Co. ..... .089c
Barton Duer & Koch Paper Co... .0922c
Walker Goulard Plehn Co. ..... .0949c
Frank Parsons Paper Co. ..... .0881c
No. 9—230,000 lbs., 25x38—70; rolls, 24, 36, and 48 ins. wide, 36 inches in diameter (3-inch fiber cores).
Fitchburg Paper Co. ..... .0997c
*Mudge Paper Co. ..... .0879c
Stanford Paper Co. ..... .089c
Barton Duer & Koch Paper Co... .0922c
Walker Goulard Plehn Co. ..... .0949c
Frank Parsons Paper Co. ..... .0881c

English-Finish Book

No. 10—100,000 lbs., 25x38—90; flat, cut any size, min. width 24 ins., max. width 48 ins.
Fitchburg Paper Co. ..... .1078c
*Stanford Paper Co. ..... .0925c
Barton Duer & Koch Paper Co... .094c

Machine-Finish Book End Paper

No. 17—20,000 lbs., 25x38—160; flat, cut 38x50 ins.
*Wilcox Walter Furlong Paper Co. .1129c

Offset Book

No. 18—300,000 lbs., 25x38—80; flat, cut any size, min. width 24 ins., max. width 48 ins.; the grain to run lengthwise of the sheet.
Fitchburg Paper Co. ..... .127c
*Mudge Paper Co. ..... .12c
(100,000 lbs. only)
Central Ohio Paper Co. ..... .1238c
*Frank Parsons Paper Co. ..... .1215c
No. 19—1,400,000 lbs., 25x38—100; flat, cut any size, min. width, 24 ins., max. width 48 ins., the grain to run lengthwise of the sheet.
Fitchburg Paper Co. ..... .1141c
(400,000 lbs. only)
Fitchburg Paper Co. ..... .1166c
(400,000 lbs. only)
Fitchburg Paper Co. ..... .1191c
(600,000 lbs. only)
*Mudge Paper Co. ..... .113c
(600,000 lbs. only)
Stanford Paper Co. ..... .133c
Central Ohio Paper Co. ..... .1198c
*Frank Parsons Paper Co. ..... .114c
No. 20—125,000 lbs., 25x38—120; flat, cut any size, min. width 24 ins., max. width 48 ins.; the grain to run lengthwise of the sheet.
Whitaker Paper Co. ..... .1271c
Fitchburg Paper Co. ..... .1137c
*Mudge Paper Co. ..... .1115c
Stanford Paper Co. ..... .1255c
Central Ohio Paper Co. ..... .1138c
Wilcox Walter Furlong Paper Co. .1196c

Antique Book

No. 21—80,000 lbs., 25x38—90; flat, cut 32x42, 33x43, and 38x50.
Fitchburg Paper Co. ..... .1133c
*Stanford Paper Co. ..... .096c
Barton Duer & Koch Paper Co... .0974c
Central Ohio Paper Co. ..... .1055c
No. 22—40,000 lbs., 25x38—120; flat, cut 32x42, and 38x50 ins.
Fitchburg Paper Co. ..... .1075c
*Stanford Paper Co. ..... .094c
Barton Duer & Koch Paper Co... .0974c
Central Ohio Paper Co. ..... .1031c
Wilcox Walter Furlong Paper Co. .1086c
No. 23—40,000 lbs., 25x38—140; flat, cut 32x42, 38x48, and 38x50 ins.
Fitchburg Paper Co. ..... .1075c
*Stanford Paper Co. ..... .094c
Barton Duer & Koch Paper Co... .096c
Central Ohio Paper Co. ..... .1031c
Wilcox Walter Furlong Paper Co. .1086c

Lightweight Machine-Finish Book

No. 24—10,000 lbs., 25x38—60; flat, cut 28x38 and 38x48 ins.
*Frank Parsons Paper Co. ..... .1508c

50% Antique Book

No. 26—80,000 lbs., 25x38—80; flat, cut 32x48 and 38x48 ins.
Royal Paper Corp. ..... .1999c
*Walker Goulard Plehn Co. ..... .1636c
Frank Parsons Paper Co. ..... .1641c
Howard Paper Mills (Aetna Div.) .1727c
No. 27—30,000 lbs., 25x38—80; shall be suitable for writing on with ink, flat, cut 22¼x31 ins.
Royal Paper Corp. ..... .1999c
*Walker Goulard Plehn Co. ..... .1636c
Frank Parsons Paper Co. ..... .1641c
Howard Paper Mills (Aetna Div.) .1727c

Water Resistant (Text) Book

No. 30—80,000 lbs., 25x38—120; flat, cut 32x42 and 35x45 ins.
*Stanford Paper Co. ..... .1475c
Frank Parsons Paper Co. ..... .1477c

Supercalendered Book

No. 32—100,000 lbs., 25x38—90; flat, cut any size, min. width 24 ins., max. width 48 ins.
Mead Sales Co. ..... .101c
Mudge Paper Co. ..... .1035c
(200,000 lbs. only)
*Stanford Paper Co. ..... .0988c
Frank Parsons Paper Co. ..... .1031c
No. 33—450,000 lbs., 25x38—90; rolls, 28½ and 38 ins. wide, 36 ins. in diameter (3-inch fiber cores).
*R. P. Andrews Paper Co. ..... .0784c
Mead Sales Co. ..... .093c
Mudge Paper Co. ..... .091c
(200,000 lbs. only)
Stanford Paper Co. ..... .0885c
(200,000 lbs. only)
Frank Parsons Paper Co. ..... .0931c

Coated Book

No. 34—500,000 lbs., 25x38—100; flat, cut any size, min. width 24 ins., max. width 48 ins.
*R. P. Andrews Paper Co. ..... .09849c
Mudge Paper Co. ..... .0985c
Barton Duer & Koch Paper Co... .0985c
Frank Parsons Paper Co. ..... .09849c
No. 35—100,000 lbs., 25x38—120; flat, cut any size, min. width 24 ins., max. width 48 ins.
*R. P. Andrews Paper Co. ..... .09849c
Mudge Paper Co. ..... .0985c
Barton Duer & Koch Paper Co... .0985c
Frank Parsons Paper Co. ..... .09849c
No. 36—80,000 lbs., 25x38—100; rolls, 28½ and 38 ins. wide, 36 ins. in diameter (3-inch fiber cores).
R. P. Andrews Paper Co. ..... .0833c
Mudge Paper Co. ..... .0882c
Barton Duer & Koch Paper Co... .0833c
*Frank Parsons Paper Co. ..... .079c
No. 38—400,000 lbs., 25x38—140; flat, cut 28x41, 32x42, 38x48, 39x50, and 41x52 ins.; the grain to run lengthwise of the sheet.
*Bermingham & Prosser Co. ..... .1295c
(150,000 lbs. only)
Bermingham & Prosser Co. ..... .126c
(250,000 lbs. only)
Mudge Paper Co. 13c
Stanford Paper Co. ..... .138c
(200,000 lbs. only)
*Walker Goulard Plehn Co. ..... .1295c
(250,000 lbs. only)

Goldenrod Coated Book

No. 37—2,000 lbs., 25x38—160; flat, cut 38x50 and 42x58 ins., min. order, 2,000 lbs.
Whitaker Paper Co. ..... .165c
*Walker Goulard Plehn Co. ..... .1605c

Litho Coated Book

No. 41—100,000 lbs., 25x38—140; flat, cut 32x42, 35x45, 38x48, 39x50, and 41x52 ins.; the grain to run lengthwise of the sheet.
Bermingham & Prosser Co. ..... .143c
*Stanford Paper Co. ..... .1425c

Dull Coated Book

No. 42—40,000 lbs., 25x38—140; flat, cut 32x42 and 38x48 ins.; the grain to run lengthwise of the sheet.

Ground Wood Mimeograph Paper

No. 43—100,000 lbs., No. 40, flat, cut 32½x42½ ins.; the grain to run lengthwise of the sheet.
*Stanford Paper Co. ..... .0775c
Bulkley Dunton Co. ..... .0797&c
Barton Duer & Koch Paper Co... .09c
Frank Parsons Paper Co. ..... .0782c

Chemical Wood Mimeograph White and Colored

No. 44—750,000 lbs., white, No. 40. Flat, cut 28½x34½, 32½x42½, 38x48½ ins. Grain size 28½x34½ ins., to run the 28½ inch way; size 32½x42½ to run the 42½ inch way; size 38x48½ ins. to run the 38 inch way.
Whitaker Paper Co. ..... .109c
Mudge Paper Co. ..... .0975c
(400,000 lbs. only)
*Stanford Paper Co. ..... .0896c
Barton Duer & Koch Paper Co... .0912c
Walker Goulard Plehn Co. ..... .1087c
Frank Parsons Paper Co. ..... .0954c
No. 45—60,000 lbs., blue, buff, green, pink and yellow, No. 40. Flat, cut 32½x42½, and 38x48½ ins. Grain: Size 32½x42½ ins. to run the 42½ inch way; size 38x48½ ins. to run the 38 inch way. Min. order, one color, 10,000 lbs.
*Walker Goulard Plehn Co. ..... .139c

25% Mimeograph

No. 46—300,000 lbs., No. 40; Flat, cut 28½x34½, 32½x42½, 38x48½, and 40½x42½ ins. Grain: Size 28½x34½ ins. to run the 28½ inch way; sizes 32½x42½ and 40½x42½ ins. to run the 42½ inch way; size 38x48½ ins. to run the 38 inch way.
R. P. Andrews Paper Co. ..... .1257c
*Walker Goulard Plehn Co. ..... .1154c
Howard Paper Mills (Aetna Div.) .1257c

Duplicator Copy Paper, Liquid Process, White and Colored

No. 47—400,000 lbs., white, No. 40. Flat, cut 32x42, 34x44 and 40x52½ ins.; the grain to run lengthwise of the sheet.
Fitchburg Paper Co. ..... .1219c
*Mudge Paper Co. ..... .1135c
Stanford Paper Co. ..... .1328c
Walker Goulard Plehn Co. ..... .1219c
No. 48—40,000 lbs., pink, yellow, green and blue, No. 40; flat, cut 32x42, 34x44, and 40x52½ ins.; the grain to run lengthwise of the sheet.
Stanford Paper Co. ..... .1403c
*Walker Goulard Plehn Co. ..... .1349c

Blue USMO Safety Writing

No. 49—200,000 lbs., No. 32. Rolls, 22 ins. wide, 24 ins. in diameter (3-inch fiber cores).
R. P. Andrews Paper Co. ..... .1667c
(75,000 lbs. only)
R. P. Andrews Paper Co. ..... .1667c
(50,000 lbs. only)
R. P. Andrews Paper Co. ..... .1687c
(50,000 lbs. only)
*Walker Goulard Plehn Co. ..... .164c
(50,000 lbs. only)
*Walker Goulard Plehn Co. ..... .165c
(50,000 lbs. only)
*Frank Parsons Paper Co. ..... .1651c
(50,000 lbs. only)
*Frank Parsons Paper Co. ..... .1661c
(50,000 lbs. only)
Frank Parsons Paper Co. ..... .1673c
(50,000 lbs. only)
Frank Parsons Paper Co. ..... .1688c
(50,000 lbs. only)

Chemical Wood Writing White and Colored

No. 51—100,000 lbs., white, No. 26; flat, cut any size, min. width 21 ins., max. width 48 ins.
Walker Goulard Plehn Co. ..... .1279c
*Frank Parsons Paper Co. ..... .1197c

No. 52—1,700,000 lbs., white, No. 32; flat, cut any size, min. width 21 ins., max. width 48 ins.
*R. P. Andrews Paper Co. ..... .0995c
(450,000 lbs. only)
*R. P. Andrews Paper Co. ..... .1015c
(900,000 lbs. only)
R. P. Andrews Paper Co. ..... .1045c
(400,000 lbs. only)
R. P. Andrews Paper Co. ..... .1050c
(400,000 lbs. only)
*Mudge Paper Co. ..... .10c
(200,000 lbs. only)
Stanford Paper Co. ..... .1165c
Barton, Duer & Koch Paper Co. .1042c
Walker, Goulard Plehn Co. ..... .119c
*Frank Parsons Paper Co. ..... .103c
(150,000 lbs.)
Wilcox, Walter Furlong Paper Co. .1147c
(325,000 lbs. only)
No. 53—2,000,000 lbs., white, No. 40; flat, cut any size, min. width 21 ins., max. width 48 ins.
*R. P. Andrews Paper Co. ..... .0935c
(450,000 lbs. only)
*R. P. Andrews Paper Co. ..... .0955c
(1,000,000 lbs. only)
R. P. Andrews Paper Co. ..... .0985c
(500,000 lbs. only)
R. P. Andrews Paper Co. ..... .10c
(500,000 lbs. only)
*Whitaker Paper Co. ..... .0969c
(per 150,000 lbs.)
Whitaker Paper Co. ..... .0989c
(1,000,000 lbs. only)
Mudge Paper Co. ..... .095c
(400,000 lbs. only)
Stanford Paper Co. ..... .1145c
Barton, Duer & Koch Paper Co. . .0982c
Walker, Goulard Plehn Co. ..... .1124c
Frank Parsons Paper Co. ..... .097c
Wilcox, Walter Furlong Paper Co. .1147c
(325,000 lbs. only)
No. 54—600,000 lbs., white, No. 32. Rolls, min. width 16 ins., max. width 48 ins., 36 ins. in diameter (3-inch fiber cores).
*R. P. Andrews Paper Co. ..... .0869c
Cauthorne Paper Co. ..... .0925c
Mudge Paper Co. ..... .0887c
(200,000 lbs. only)
Stanford Paper Co. ..... .0925c
Barton, Duer & Koch Paper Co. . .0962c
Walker, Goulard Plehn Co. ..... .099c
Frank Parsons Paper Co. ..... .0895c
Wilcox, Walter Furlong Paper Co. .1042c
No. 55—150,000 lbs., white, No. 40; rolls, min. width 16 ins., max. width 48 ins., 36 ins. in diameter (3-inch fiber cores).
Whitaker Paper Co. ..... .085c
Mudge Paper Co. ..... .085c
Stanford Paper Co. ..... .09c
Barton, Duer & Koch Paper Co. .09292c
Walker, Goulard Plehn Co. ..... .099c
*Frank Parsons Paper Co. ..... .0835c
Wilcox, Walter Furlong Paper Co. .1042c
No. 56—50,000 lbs., blue, buff, green, pink, salmon and yellow, No. 26, flat, cut any size, min. width 21 ins., max. width 48 ins.
*Paper Corp. of U. S. ..... .1348c
Walker, Goulard Plehn Co. ..... .1379c
No. 57—800,000 lbs., blue, buff, green, pink, salmon and yellow, No. 32; flat, cut any size, min. width 21 ins., max. width 48 ins. Min. order, one color, 10,000 lbs.
*Paper Corp. of U. S. ..... .1188c
Stanford Paper Co. ..... .124c
Walker, Goulard Plehn Co. ..... .1233c
No. 58—340,000 lbs., blue, buff, green, pink, salmon and yellow, No. 40; flat, cut any size, min. width 21 ins., max. width 48 ins. Min. order, one color, 10,000 lbs.
Stanford Paper Co. ..... .122c
*Walker, Goulard Plehn Co. ..... .1163c
No. 59—20,000 lbs., yellow, No. 32; rolls 38 ins. wide, 36 ins. in diameter (3-inch fiber cores).
*Stanford Paper Co. ..... .1186c
No. 60—60,000 lbs., white, No. 32; rolls, 36 ins. wide, 36 ins. in diameter (3-inch fiber cores).
*Stanford Paper Co. ..... .095c

Chemical Wood Writing, White and Colored

No. 61—40,000 lbs., white, No. 24; rolls, 22 ins. wide, 34 to 36 ins. in diameter (3-inch fiber cores).
*Stanford Paper Co. ..... .12c
Frank Parsons Paper Co. ..... .1246c
No. 62—30,000 lbs., white, No. 30; rolls, 22 ins. wide, 34 to 36 ins. in diameter (3-inch fiber cores).
*Stanford Paper Co. ..... .1125c
Frank Parsons Paper Co. ..... .1173c

White Chemical Wood Writing

No. 64—100,000 lbs., No. 32. Rolls, 38 ins. wide, 36 ins. in diameter (3-inch fiber cores).
Cauthorne Paper Co. ..... .0925c
*Stanford Paper Co. ..... .0925c
Walker, Goulard Plehn Co. ..... .1021c
Wilcox, Walter Furlong Paper Co. .1042c

100% White Fine Writing

No. 65—5,000 lbs., No. 56, flat, cut 32x42 ins.; min. order, 2,500 lbs.
*R. P. Andrews Paper Co. ..... .2972c
Mudge Paper Co. ..... .3319c
Barton Duer & Koch Paper Co... .30c

50% Lithograph-Finish Map

No. 70—25,000 lbs., No. 32. Flat, cut any size, min. width, 22 ins., max. width 48 ins.; the grain to run lengthwise of the sheet.
Stanford Paper Co. ..... .1687c
*Barton Duer & Koch Paper Co. ... .1675c
Howard Paper Mills (Aetna Div.) .1747c
No. 71—40,000 lbs., No. 40. Flat, cut any size, min. width 22 ins., max. width 48 ins.; the grain to run lengthwise of the sheet.
*Stanford Paper Co. ..... .1647c
Barton Duer & Koch Paper Co... .165c
Howard Paper Mills (Aetna Div.) .1707c
No. 75—64,000 lbs., No. 56. Flat, cut any size, min. width 22 ins., max. width 48 ins.; the grain to run lengthwise of the sheet.
*Stanford Paper Co. ..... .1627c
Barton Duer & Koch Paper Co... .164c
Howard Paper Mills (Aetna Div.) .1697c

High Wet Strength Map

No. 78—515,000 lbs., No. 48; flat, cut any size, min. width 22 ins., max. width 48 ins.; the grain to run lengthwise of the sheet (omit ream markers).
Cauthorne Paper Co. ..... .1599c
(250,000 lbs. only)
*Stanford Paper Co. ..... .1594c
Frank Parsons Paper Co. ..... .1678c

50% White Chart, Lithograph Finish

No. 79—60,000 lbs., No. 72, flat, cut any size, min. width 22 ins., max. width 46 ins.; the grain to run lengthwise of the sheet unless otherwise specified (omit ream markers).
*Stanford Paper Co. ..... .1802c
Barton Duer & Koch Paper Co... .19c

Chemical Wood Manifold White and Colored

No. 83—90,000 lbs., white, No. 18; flat, cut 21x32, 28x34, 32x42, and 34x44 ins.
*Frank Parsons Paper Co. ..... .12918c
Cauthorne Paper Co. ..... .147c
Stanford Paper Co. ..... .1331c
Walker Goulard Plehn Co. ..... .1249c
No. 85—20,000 lbs., blue, buff, cherry, green, pink, salmon and yellow, No. 18. Flat, cut 28x34, 32x42, and 34x44 ins. Min. order, one color, 5,000 lbs.
Bulkley Dunton Co. ..... .1878c

50% Manifold, White and Colored

No. 87—50,000 lbs., white, No. 18; flat, cut 21x32, 28x34, 32x42, and 34x44 ins.
R. P. Andrews Paper Co. ..... .2633c
*Old Dominion Paper Co. ..... .17927 9c
(30,000 lbs. only)
*Old Dominion Paper Co. ..... .18944c
(20,000 lbs. only)
Paper Corp. of U. S. ..... .1995c
Mudge Paper Co. ..... .2193c
Stanford Paper Co. ..... .22c
Barton Duer & Koch Paper Co. .185c
No. 89—5,000 lbs., blue, buff, cherry, green, pink, salmon and yellow, No. 18. Flat, cut 28x34, 32x34, and 34x44 ins. Min. order, one color, 5,000 lbs.
R. P. Andrews Paper Co. ..... .2685c
*Paper Corp. of U. S. ..... .207c
Mudge Paper Co. ..... .2349c
Barton Duer & Koch Paper Co... .21c

100% White Manifold

No. 90—5,000 lbs., No. 18, flat, cut 32x42 ins., min. order 5,000 lbs.
R. P. Andrews Paper Co. ..... .1875c
*Paper Corp. of U. S. ..... .3017c
Mudge Paper Co. ..... .3989c
Barton Duer & Koch Paper Co... .35c

50% White Glazed Manifold

No. 91—20,000 lbs., No. 16. Flat, cut 32x42 ins. Min. order, 20,000 lbs.
R. P. Andrews Paper Co. ..... .2875c
Butler Co. ..... .2299c
Paper Corp. of U. S. ..... .2244c
Stanford Paper Co. ..... .242c
*Barton Duer & Koch Paper Co... .20c

Chemical Wood Bond, White

No. 102—130,000 lbs., white, No. 40; flat, cut any size, min. width 21 ins., max. width 48 ins.
*Stanford Paper Co. ..... .11875c
Walker Goulard Plehn Co. ..... .1266c
Wilcox Walter Furlong Paper Co. .1193c

Chemical Wood White Mimeograph Bond

No. 104—50,000 lbs., No. 40; flat, cut 32½x42½ ins.; the grain to run lengthwise of the sheet.
Whitaker Paper Co. ..... .1349c
*Walker Goulard Plehn Co. ..... .1274c

25% Bond, White and Colored

No. 105—20,000 lbs., white, No. 26. Flat, cut any size, min. width 21 ins., max. width 48 ins.
Bermingham & Prosser Co. ..... .1799c
*Barton Duer & Koch Paper Co. ... .154c
Howard Paper Mills (Aetna Div.) .1727c
No. 106—40,000 lbs., white, No. 26; rolls, 22 ins. wide, 36 ins. in diameter (3-inch fiber cores).
Howard Paper Mills (Aetna Div.) .1662c
Bermingham & Prosser Co. ..... .1764c
*Barton Duer & Koch Paper Co. ... .15c
No. 107—450,000 lbs., white, No. 32, flat, cut any size, min. width 21 ins., max. width 48 ins.
*Butler Co. ..... .1522c
(200,000 lbs. only)
Butler Co. ..... .1562c
(250,000 lbs. only)
*Howard Paper Mills (Aetna Div.) .1527c
(225,000 lbs. only)
*Howard Paper Mills (Aetna Div.) .1557c
(225,000 lbs. only)
No. 109—450,000 lbs., No. 40; flat, cut any size, min. width 21 ins., max. width 48 ins.
*Howard Paper Mills (Aetna Div.) .1469c
(225,000 lbs. only)
*Howard Paper Mills (Aetna Div.) .1499c
(225,000 lbs. only)
*Bermingham & Prosser Co. ..... .1491c
(200,000 lbs. only)
Bermingham & Prosser Co. ..... .1509c
(250,000 lbs. only)
No. 110—10,000 lbs., white, No. 32, rolls, 21 and 26 ins. wide, 36 ins. in diameter (3-inch fiber cores).
No. 112—20,000 lbs., cherry, green, pink, and yellow, No. 32; rolls 26 ins. wide, 36 ins. in diameter (3-inch fiber cores).
No. 113—5,000 lbs., blue, buff, cherry, green, pink, salmon and yellow, No. 26, flat, cut 34x44 ins., min. order 5,000 lbs.
*Bermingham & Prosser Co. ..... .1874c
No. 114—200,000 lbs., blue, buff, cherry, green, pink, salmon, and yellow, No. 32. Flat, cut any size, min. width 21 ins., max. width 48 ins.
Mudge Paper Co. ..... .1622c
*Howard Paper Mills (Aetna Div.) .1614c
No. 115—40,000 lbs., blue, buff, cherry, green, pink, salmon and yellow, No. 40; flat, cut any size, min. width 21 ins., max. width 48 ins.
Butler Co. ..... .1568c
*Howard Paper Mills (Aetna Div.) .1556c

25% Opacified Bond Paper

No. 116—40,000 lbs., white, No. 32; flat, cut 32x42 and 38x48 ins.
Howard Paper Mills (Aetna Div.) .1793c
Howard Paper Mills (Aetna Div.) .1849c
Bermingham & Prosser Co. ..... .1692c
Bermingham & Prosser Co. ..... .1752c
*Barton Duer & Koch Paper Co... .155c
(white)
Barton Duer & Koch Paper Co... .165c
(buff)
No. 116—20,000 lbs., buff, No. 32; flat, cut 29x44 ins.

50% White Bond

No. 121—10,000 lbs., No. 32, flat, cut any size, min. width 21 ins., max. width 34 ins.
*Mudge Paper Co. ..... .1799c
Howard Paper Mills (Aetna Div.) .1957c
No. 122—30,000 lbs., No. 40, flat, cut any size, min. width 21 ins., max. width 34 ins.
Howard Paper Mills (Aetna Div.) .1847c
Mudge Paper Co. ..... .1752c
*Barton Duer & Koch Paper Co... .165c

100% White Bond

No. 150—10,000 lbs., No. 40; flat, cut any size, min. width 16 ins., max. width 38 ins., min. order 2,000 lbs.
R. P. Andrews Paper Co. ..... .2968c
Mudge Paper Co. ..... .3199c
Stanford Paper Co. ..... .282c
Barton Duer & Koch Paper Co... .29c
Walker Goulard Plehn Co. ..... .294c
*Frank Parsons Paper Co. ..... .2721c

Chemical Wood White Ledger

No. 150—200,000 lbs., No. 48. Flat, cut any size, min. width 17 ins., max. width 48 ins.
Wilcox Walter Furlong Paper Co. .1194c
Whitaker Paper Co. ..... .1274c
Stanford Paper Co. ..... .1149c
*Bulkley Dunton & Co. ..... .1124c
Walker Goulard Plehn Co. ..... .1242c
No. 151—50,000 lbs., No. 64; flat, cut any size min. width 17 ins., max. width 48 ins.
Whitaker Paper Co. ..... .1274c
Stanford Paper Co. ..... .118c
*Bulkley Dunton & Co. ..... .1124c
Walker Goulard Plehn Co. ..... .1172c
Wilcox Walter Furlong Paper Co. .1194c
No. 153—20,000 lbs., No. 88, flat, cut any size, min. width 17 ins., max. width 48 ins.
Stanford Paper Co. ..... .118c
*Walker Goulard Plehn Co. ..... .1172c

25% Ledger, White and Colored

No. 154—130,000 lbs., white, No. 48; flat, cut 28x34, 32x42, 34x44, and 38x48 ins. Min. order 10,000 lbs.
Butler Co. ..... .1544c
*Stanford Paper Co. ..... .141c
Howard Paper Mills (Aetna Div.) .1507c
No. 155—60,000 lbs., white, No. 64; flat, cut 28x34, 32x42, 34x44, and 38x48 ins. Min order 13,000 lbs.

Howard Paper Mills (Aetna Div.) .1507c
Bermingham & Prosser Co. ..... .1539c
*Stanford Paper Co. ..... .1444c

No. 156—40,000 lbs., white, No. 88, flat, cut 28x34, 32x42, 34x44 and 38x48 ins., min. order 10,000 lbs.
*Stanford Paper Co. ..... .1484c
Howard Paper Mills (Aetna Div.) .1547c

No. 157—35,000 lbs., blue, buff, cherry, green, pink, salmon, and yellow, No. 64. Flat, cut 34x44 ins. Min. order, one color, 10,000 lbs.
Howard Paper Mills (Aetna Div.) .1567c
Mudge Paper Co. ..... .1594c
*Stanford Paper Co. ..... .1484c
Barton Duer & Koch Paper Co... .15c

No. 158—30,000 lbs., blue, buff, cherry, green, pink, salmon, and yellow, No. 88; flat, cut 34x44 ins., min. order, one color, 10,000 lbs.
Stanford Paper Co. ..... .1544c
*Barton Duer & Koch Paper Co... .15c
Howard Paper Mills (Aetna Div.) .1607c

Chemical Wood, White and Colored Index

No. 182—240,000 lbs., white, 25½x30½—220; flat, cut 32x42 and 34x44 ins., with projecting colored-paper marker between each 100 sheets. Min. order, 10,000 lbs.
*Frank Parsons Paper Co. ..... .1004c
Wilcox Walter Furlong Paper Co. .1143c
R. P. Andrews Paper Co. ..... .1215c
Whitaker Paper Co. ..... .1029c
Stanford Paper Co. ..... .1165c
Barton Duer & Koch Paper Co... .108c
Walker Goulard Plehn Co. ..... .1104c

No. 183—20,000 lbs., white, 25½x30½—280; flat, cut 34x44 ins., with projecting colored-paper marker between each 100 sheets, min. order 10,000 lbs.
R. P. Andrews Paper Co. ..... .1215c
Stanford Paper Co. ..... .1183c
*Barton Duer & Koch Paper Co... .108c
Walker Goulard Plehn Co. ..... .1123c
Wilcox Walter Furlong Paper Co. .1163c

No. 184—10,000 lbs., white, 25½x30½—340; flat, cut 34x44 ins. with projecting colored-paper marker between each 100 sheets, min. order 10,000 lbs.
Wilcox Walter Furlong Paper Co. .1163c
R. P. Andrews Paper Co. ..... .1215c
Stanford Paper Co. ..... .1183c
*Barton Duer & Koch Paper Co... .108c
Walker Goulard Plehn Co. ..... .1179c

50% Index, White and Colored

No. 188—250,000 lbs., white, 25½x30½—220; flat, cut 32x42, 32x48 and 34x44 ins., with projecting colored-paper marker between each 100 sheets. Min. order, 10,000 lbs.
*Barton Duer & Koch Paper Co. .. .1503c
Walker Goulard Plehn Co. ..... .1663c
Howard Paper Mills (Aetna Div.) .1587c

No. 191—100,000 lbs., blue, buff, cherry, fawn, green, pink, salmon, and yellow; 25½x30½—220; flat, cut 34x44 ins., with projecting colored-paper marker between each 100 sheets. Min. order, one color, 10,000 lbs.
Howard Paper Mills (Aetna Div.) .1647c
R. P. Andrews Paper Co. ..... .1296c
*Barton Duer & Koch Paper Co... .1583c
Walker Goulard Plehn Co. ..... .1713c

No. 192—10,000 lbs., blue, buff, cherry, fawn, green, pink, salmon, and yellow; 25½x30½—280; flat, cut 34x44 ins., with projecting colored-paper marker between each 100 sheets. Min. order, one color, 10,000 lbs.
*Barton Duer & Koch Paper Co. .. .1601c
Walker Goulard Plehn Co. ..... .1765c
Howard Paper Mills (Aetna Div.) .1757c

100% White Index

No. 196—60,000 lbs., 25½x30½—250; flat, cut 20½x30 ins.
R. P. Andrews Paper Co. ..... .2862c
Stanford Paper Co. ..... .2856c
*Barton Duer & Koch Paper Co... .2636c
Walker Goulard Plehn Co. ..... .3256c

Antique-Finish Cover, White and Colored

No. 202—20,000 lbs., white, 20x26—100. Flat, cut 25½x39 inches.
Wilcox Walter Furlong Paper Co. .1174c
R. P. Andrews Paper Co. ..... .1296c
Stanford Paper Co. ..... .1316c
Marquette Paper Co. ..... .12c
*Walker Goulard Plehn Co. ..... .1134c

No. 203—80,000 lbs., 20x26—100; blue, buff, dawn, quaker drab, terra cotta, gray, brown, green, gobelin blue, granite, tea, and canary; flat, cut 25½x39 inches. Min. order, one color, 10,000 lbs.
R. P. Andrews Paper Co. ..... .1296c
Stanford Paper Co. ..... .1385c
Marquette Paper Co. ..... .13c
*Walker Goulard Plehn Co. ..... .1244c

50% Laid Cover, Colored

No. 206—40,000 lbs., blue, cream, white, gray, and green; 20x26—130; flat, cut 25½x39 and 28x41 inches. Min. order, one color, 2,000 lbs.
R. P. Andrews Paper Co. ..... .1796c
*Paper Corp. of U. S. ..... .1736c

Wood Manila

No. 208—120,000 lbs., 24x36—80; flat, cut 25x38, 32x42 and 40x52½ ins.
*Whitaker Paper Co. ..... .074c
Old Dominion Paper Co. ..... .075498c
Bermingham & Prosser Co. ..... .0848c
Stanford Paper Co. ..... .074c
Bulkley Dunton & Co. ..... .07679c
Barton Duer & Koch Paper Co... .085c
Walker Goulard Plehn Co. ..... .1023c
Frank Parsons Paper Co. ..... .0782c

Rope Manila

No. 215—5,000 lbs., 24x36—160; rolls, 48 ins. wide (3-inch fiber cores), min. order 5,000 lbs.
*R. P. Andrews Paper Co. ..... .2945c
Paper Corp. of U. S. ..... .3125c

Drumhead Manila

No. 217—5,000 lbs., 24x36—280; flat, cut 32x42 ins., min. order 5,000 lbs.
*Paper Corp. of U. S. ..... .31c

No. 2 Kraft

No. 218—30,000 lbs., 24x36—80; flat, cut any size, in wrapped bundles.

No. 218—30,000 lbs., 24x36—120; flat, cut any size, in wrapped bundles.

No. 218—30,000 lbs., 24x36—140; flat, cut any size, in wrapped bundles.

No. 218—20,000 lbs., 24x36—160; flat, cut any size, in wrapped bundles.
Heller & Usdan, Inc. ..... .0878c
*Cauthorne Paper Co. ..... .07449c

No. 219—30,000 lbs., 24x36—100; cut any size, folded (25 sheets per fold), in wrapped bundles.
Heller & Usdan, Inc. ..... .1028c
*Cauthorne Paper Co. ..... .0794c

No. 220—80,000 lbs., 24x36—100; rolls, min. width 9 ins., max. width 48 ins., min. diameter of rolls 15 ins., max. diameter 36 ins., as may be specified with order, wound on wooden plugs, 1½-inch hole, or on 3-inch fiber cores as may be specified.

No. 220—5,000 lbs., 24x36—120; rolls, min. width 9 ins., max. width 48 ins., min. diameter of rolls 15 ins., max. diameter 36 ins. as may be specified with order, wound on wooden plugs, 1½-inch hole, or on 3-inch fiber cores as may be specified.

No. 220—20,000 lbs., 24x36—160; rolls, min. width 9 ins., max. width 48 ins., min. diameter of rolls 15 ins., max. diameter 36 ins. as may be specified with order, wound on wooden plugs, 1½-inch hole, or on 3-inch fiber cores as may be specified.
*Cauthorne Paper Co. ..... .06899c

White Gummed

No. 252—250,000 sheets (ungummed), No. 36; flat, cut 22x34 ins. Min. order, 25,000 sheets.
R. P. Andrews Paper Co. ..... $19.15 (per M sheets)
Whitaker Paper Co. ..... $23.67 (per M sheets)
Butler Co. ..... $19.50 (per M sheets)
Old Dominion Paper Co. ..... $19.427 (per M sheets)
Bermingham & Prosser Co. ..... $19.30 (per M sheets)
Paper Corp. of U. S. ..... $19.48 (per M sheets)
*Mudge Paper Co. ..... $18.92 (per M sheets)
Stanford Paper Co. ..... $23.67 (per M sheets)
Bulkley Dunton & Co. ..... $19.049 (per M sheets)
Mathers Lamm Paper Co. ..... $21.90 (per M sheets)

25% Blotting, White

No. 254—10,000 lbs., 19x24—160; flat, cut 19x24 ins. in wrapped bundles. Min. order, 10,000 lbs.
R. P. Andrews Paper Co. ..... .1496c
Whitaker Paper Co. ..... .145c
Butler Co. ..... .14c
Old Dominion Paper Co. ..... .13608c
Mudge Paper Co. ..... .1363c
Stanford Paper Co. ..... .14c
Barton Duer & Koch Paper Co. .. .1363c
Marquette Paper Corp. ..... .16c
*Mathers Lamm Paper Co. ..... .135048c (per lb.)
Walker Goulard Plehn Co. ..... .1363c
Frank Parsons Paper Co. ..... .1357c

Desk Blotting, Colored

No. 255—25,000 lbs., moss green, 19x24—200; flat, cut 19x24 ins., in wrapped bundles, min. order, 10,000 lbs.
R. P. Andrews Paper Co. ..... .1149c
*Whitaker Paper Co. ..... .11c
Butler Co. ..... .115c
Old Dominion Paper Co. ..... .12264c
Mudge Paper Co. ..... .1227c
Stanford Paper Co. ..... .115c
Barton Duer & Koch Paper Co... .123c
Marquette Paper Corp. ..... .13c
Mathers Lamm Paper Co. ..... .121896c
Walker Goulard Plehn Co. ..... .1147c
Frank Parsons Paper Co. ..... .1357c

High-Finish Chemical Wood Manila Tag

No. 271—40,000 lbs., 24x36—280; flat, cut 28x34 and 38x48 ins.
R. P. Andrews Paper Co. ..... .1069c
*Paper Corp. of U. S. ..... .1027c
Walker Goulard Plehn Co. ..... .1044c

Jute Tag

No. 280—25,000 lbs., 22½x28½—200; flat, cut 34x44 ins., min. order 10,000 lbs.
R. P. Andrews Paper Co. ..... .151c
Paper Corp. of U. S. ..... .167c
*Walker Goulard Plehn Co. ..... .1507c

No. 281—10,000 lbs., 22½x28½—280; flat, cut 34x44 ins., min. order 10,000 lbs.
R. P. Andrews Paper Co. ..... .151c
Paper Corp. of U. S. ..... .167c
*Walker Goulard Plehn Co. ..... .1507c

Railroad Board, White & Colored

No. 301—25,000 lbs., white, flat, 22x34 ins., 4-ply, each 100 sheets fully banded, min. order 10,000 sheets.
*Old Dominion Paper Co. ..... $51.397 (per M sheets)
Paper Corp. of U. S. ..... $51.70 (per M sheets)
Stanford Paper Co. ..... $51.60 (per M sheets)
Bulkley Dunton & Co. ..... $51.549 (per M sheets)
Barton Duer & Koch Paper Co. $51.60 (per M sheets)

No. 302—10,000 lbs., white, flat, 22x34 ins., 8-ply, each 100 sheets fully banded, min. order 5,000 sheets.
*Old Dominion Paper Co. ..... $74.68 (per M sheets)
Paper Corp. of U. S. ..... $75.25 (per M sheets)
Stanford Paper Co. ..... $75.00 (per M sheets)
Bulkley Dunton & Co. ..... $74.947 (per M sheets)
Barton Duer & Koch Paper Co... $75.00 (per M sheets)

No. 304—15,000 lbs., ash gray, green, orange and red, flat, 22x34 ins., 4-ply, each 100 sheets fully banded, min. order, one color, 5,000 sheets.
Old Dominion Paper Co. ..... $66.689 (per M sheets)
*Paper Corp. of U. S. ..... $66.15 (per M sheets)
Stanford Paper Co. ..... $66.95 (per M sheets)
Bulkley Dunton & Co. ..... $66.905 (per M sheets)

No. 305—5,000 lbs., buff, flat, 22x28 ins., 14-ply, each 50 sheets fully banded, min. order 5,000 sheets.
*Old Dominion Paper Co. ..... $98.87 (per M sheets)
Stanford Paper Co. ..... $99.25 (per M sheets)
Bulkley Dunton & Co. ..... $99.205 (per M sheets)
Barton Duer & Koch Paper Co... $99.25 (per M sheets)

Wood Cardboard, Colored

No. 306—100,000 lbs., buff; 22½x28½—150; rolls, 20 and 21 ins. wide, 36 ins. in diameter (3-inch fiber cores).
Whitaker Paper Co. ..... .0775c
Bermingham & Prosser Co. ..... .0724c
*Barton Duer & Koch Paper Co. .. .06813c (per lb.)
Walker Goulard Plehn Co. ..... .0877c
Frank Parsons Paper Co. ..... .0696c

No. 307—80,000 lbs., buff, 22½x28½—130; flat, cut 32x42 ins.
Whitaker Paper Co. ..... .091c
Bermingham & Prosser Co. ..... .0875c
*Barton Duer & Koch Paper Co. .. .0734c (per lb.)
Walker Goulard Plehn Co. ..... .101c
Frank Parsons Paper Co. ..... .0795c

No. 308—10,000 lbs., melon, 22½x28½—184; flat, cut 20x30 ins.
*Bermingham & Prosser Co. ..... .0885c (per lb.)

No. 309—250,000 lbs., blue, buff, green, melon, pink, and yellow; 22½x28½—184. Rolls, 20 ins. wide, 36 ins. in diameter (3-inch fiber cores).
Whitaker Paper Co. ..... .0805c
*Bermingham & Prosser Co. ..... .072c (per lb.)
Barton Duer & Koch Paper Co... .072c
Walker Goulard Plehn Co. ..... .0919c

Chemical Wood Tan Board

No. 310—30,000 lbs., 22½x28½—200; flat, cut 25x38, 28x38, and 34x44 inches.
R. P. Andrews Paper Co. ..... .125c
Paper Corp. of U. S. ..... .122c
*Stanford Paper Co. ..... .1106c
Walker Goulard Plehn Co. ..... .1193c

United States Postal Card Paper

No. 325—5,500,000 lbs., 22½x28½—188; rolls, 33 ins. wide, 36 ins. in diameter (6-inch iron or metal capped returnable fiber cores).

*R. P. Andrews Paper Co. (1,900,000 lbs. only)	.0812c
Whitaker Paper Co. (1,800,000 lbs. only)	.0827c
Whitaker Paper Co. (1,800,000 lbs. only)	.0837c
Whitaker Paper Co. (1,900,000 lbs. only)	.0847c
*Walker Goulard Plehn Co. (800,000 lbs. only)	.0836c
Frank Parsons Paper Co. (1,000,000 lbs. only)	.0799c

No. 327—100,000 lbs., 22½x28½—188; rolls, 22 ins. wide, 36 ins. diameter (6-inch iron or metal-capped returnable fiber cores).

*Whitaker Paper Co.	.0827c

Pressboard, Colored

No. 352—30,000 lbs., gray, flat, cut 30x36 ins., thickness .0300 inch. Min. order 5,000 sheets.

R. P. Andrews Paper Co. (per C sheets)	$32.98
Paper Corp. of U. S. (per C sheets)	$31.55
*Barton Duer & Koch Paper Co. (per C sheets)	$24.58

Newsboard

No. 360—100,000 lbs., 25x38; No. 100; flat, cut any size, min. width 21 ins., max. width 40 ins. (To be guillotine-trimmed square on four sides.)

R. P. Andrews Paper Co. (per lb.)	.0322c
*Whitaker Paper Co.	.02926c
Old Dominion Paper Co.	.029478c
Resolute Paper Products Corp.	.0302c
Pulp & Paper Trading Co.	.02989c
Mudge Paper Co.	.02953c
Stanford Paper Co.	.0296c
Bulkley Dunton & Co.	.032574c
Barton Duer & Koch Paper Co.	.0305c
Mathers Lamm Paper Co.	.032c

Binder's Board, No. 1 Quality

No. 366—50,000 lbs., No. 1, 25¾x30¾ ins., Nos. 16, 18, 20, 25, 30, and 40; flat, to trim 25x30 ins.

Mudge Paper Co.	.059c
Mudge Paper Co.	.054c
*Barton Duer & Koch Paper Co.	.054c

No. 367—10,000 lbs., 25¾x30¾ ins., Nos. 12 and 20, flat, to trim 34x44 ins.

*R. P. Andrews Paper Co.	.064c

Chestnut Cover Board

No. 369—80,000 lbs., 25½x30½; flat, to trim 25x30 inches, Nos. 17, 19, 21, 25, 31, and 41.

*Mead Board Sales, Inc. (No. 4 Board)	.05725c
Mead Board Sales, Inc. (No. 4 Board)	.057c
*Mead Board Sales, Inc. (Any other board)	.0535c
Mead Board Sales, Inc. (Any other board)	.05325c

No. 370—150,000 lbs., 25½x30½; Nos. 16, 19, 24, and 31. Flat, to trim 25¾x37¾ ins.

*Mead Board Sales, Inc. (No. 3 Board)	.05725c
Mead Board Sales, Inc. (No. 3 Board)	.057c
*Mead Board Sales, Inc. (Any other board)	.0535c
Mead Board Sales, Inc. (Any other board)	.0525c

Fowler Will Not Testify

OTTAWA—R. M. Fowler, of Montreal, Que., president of the Newsprint Assn. of Canada, will not testify before the House subcommittee on study of Monopoly power to meet in Washington starting June 19, it is learned. It is understood he had advised Rep. Emanuel Cellar, chairman of the judiciary committee of the House.

Mr. Fowler points out that the committee in February declined his invitation to visit Canada to study Canadian newsprint production and he feels now that any light he may throw on the subject may be gained from a memorandum he has provided the newsprint committee of the Inland Daily Press Assn.

Patent Abstracts

● ***In addition to abstracts on the technology of pulp, paper and related industries, miscellaneous abstracts which may provide useful information are included.***

United States

2,509,047 — Paper-cutting and Delivery Mechanism for Web Cylinder Lithographing or Printing Presses. Laszlo M. Stempel, New York, N.Y., assignor, by mesne assignments, to R. Hoe & Co., Inc., New York, N.Y. Filed July 1, 1946 — Issued May 23, 1950.

In a cutting and delivery mechanism for cylinder presses, the combination with web feed mechanism and a rotary cutter coacting therewith to cut sheets, of means for selectively driving the cutter at either of two predetermined speed ratios from the web feed mechanism, guide means for receiving sheets from the cutter and directing them to a delivery station, air blast means embodied in the cutter and operable when the cutter is in a predetermined position to deflect sheets downwardly on to the said guide means as they emerge from the cutter, and means for moving the said guide means to guide sheets under the action of said air blast downwardly to a reject station.

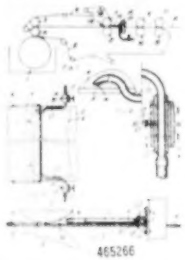
2,509,132—Holders for Paper Cups. Herman Carew, Easton, Pa., assignor to Dixie Cup Company, Chicago, Ill. Filed November 15, 1943—Issued May 23, 1950.

2,509,133—Paper Cup Holder. Herman Carew, Easton, Pa., assignor to Dixie Cup Company, Chicago, Ill. Filed June 23, 1944 — Issued May 23, 1950.

2,509,134 — Holder for Paper Cups. Herman Carew, Easton, Pa., assignor to Dixie Cup Company, Chicago, Ill. Filed October 29, 1945 — Issued May 23, 1950.

Canadian

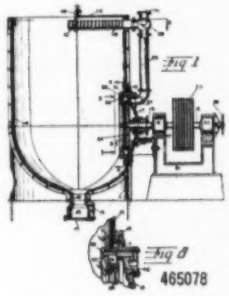
465,266 — Paper Making Machine. Elmer J. Worden, Kalamazoo, Michigan, U.S.A. Filed April 26, 1948 — Issued May 23, 1950.



465266

The combination in a paper making machine including top and bottom felts and co-acting upper and lower press rolls, of a pair of nozzle members having outwardly directed tips overhanging the edge portions of the bottom felt and disposed closely adjacent thereto and at the rear of and closely adjacent the nip of the rolls and between the top and bottom felts and between the rearward portions of the upper and lower press rolls for directing jets of air above and laterally of the bottom felt adjacent the edges thereof and the edges of a web thereon for discharging laterally and outwardly beyond the edges of the top and bottom felts and the ends of the rolls excess water accumulating at the rear of the rolls and preventing such excess water being thrown by centrifugal force onto the web of the paper at the rear of the rolls, supporting brackets for said nozzle members having elongated and non-circular sockets therein disposed substantially parallel to the axes of the press rolls, said nozzle members being provided with elongated and non-circular supporting portions longitudinally slidably disposed in said sockets for adjustment of the nozzle tips in a direction parallel to the plane of the bottom felt and towards and from the edges thereof, and means for securing said supporting portions of said nozzle members in their adjusted positions within said sockets whereby the discharge of the nozzles relative to the edges of the felt may be regulated.

465,078 — Machine for Treating Fibrous Material. Charles W. Morden, Portland, Oregon, U.S.A. Filed April 26, 1948 — Issued May 16, 1950.



In a machine for treating fibrous material, a stationary ring member, an attritioning surface on said ring member, shredding teeth on the inner periphery of said stationary ring member extending inwardly towards the centre of said ring member, a rotating disc parallel to and concentric with said ring member, an annular rim on said disc, an attritioning surface on said rim co-operating with said attritioning surface of said ring member, shredding teeth on the inner periphery of said rim extending inwardly from said rim and co-operating with said shredding teeth on said ring member, the inner periphery of said ring member and the inner periphery of said rim comprising circles of approximately the same diameter in alignment with each other, and means on said disc for delivering and impinging material against said two sets of shredding teeth when said disc is rotated.

L. T. Twining Honored

BINGHAMTON, N.Y.—The employes of Walter R. Miller Co., Inc., honored Louis E. Twining at a surprise dinner party on June 10 to celebrate his fifty years of service with the company. Mr. Twining started as bundle boy for the company fifty years ago and is now president.

Use of Polyethylene as a Paper Coating

L. M. BURGESS
Field Engineer, H. P. Smith Paper Co., Chicago, Ill.

A thermoplastic coating should have the following properties and it will be shown how polyethylene coated paper fulfills most of these requirements. The properties are: water, watervapor and grease resistance, non-toxic, tasteless and odorless, plasticizer retention, resistance to creasing and fiber rupture, heat sealing, non-blocking, controlled surface friction, adhesion, gas resistance, low temperature flexibility, controlled coating weights, aging characteristics and last but not least should be readily available and inexpensive.

Water and Watervapor Resistance

Polyethylene coated paper resists the penetration of liquid water almost indefinitely. Its watervapor transmission rate is inversely proportional to the film thickness. At a temperature of 100°F. and 95 percent relative humidity, coatings, 1 mil thick, have a transmission rate of 1 g./100 sq. in./24 hrs. It is much slower at normal temperatures and at zero it is very slow.

Polyethylene coated paper is odorless, tasteless and non-toxic.

Plasticizer Retention

It has been said that the ideal paper coating should contain no plasticizer. Most plastic coatings require the use of a plasticizer or softener in order to produce coatings of the desired flexibility and smoothness and here is one place where polyethylene differs from the other plastics. Polyethylene is in itself a very flexible material and, consequently, is the ideal plastic in this respect.

Gas Resistance

Polyethylene is not very resistant to the transmission of gases such as carbon dioxide and oxygen. Little work has been done with the coated paper, but there is no doubt that the type of backing sheet will greatly affect these rates. As an example, if a glassine sheet is coated with polyethylene, the rate of oxygen transmission will be reduced to that of the glassine. In fact, a great deal of thought should be given to the backing sheet and to fields where it is desirable to control the transmission rate of carbon dioxide, oxygen and the products of rancidity.

Resistance to Creasing and Fiber Rupture

Paper coatings weak in film strength show increased vapor transmission rates when creased or crinkled. Polyethylene coatings show no evidence of rupture under severe creasing and wrinkling. Sheets coated with 1½ to 2 mils of polyethylene remain virtually pinhole-free after creping. Water vapor transmission rates show no increase or change within experimental limits. Furthermore, adhesion of the polyethylene to the paper is not impaired by the creping operation.

Controlled Coating Weights

A thermoplastic coating is of little value unless the weight of coating can be controlled. Polyethylene can be coated in thicknesses from ½ mil to 10 mils without difficulty. It is of course apparent that where the coating is to be used only for cleanliness and sanitary reasons or where the end use requires only a fiber-free sheet, minimum coatings be applied for economical reasons. In coating paper it should be the rule that only minimum coating be applied for optimum results compatible with the end use requirements.

Aging Characteristics

Because polyethylene requires no plasticizer and resists oxidation there is no embrittlement or loss of heat sealing characteristics or discoloration over long periods of storage.

Adhesion

While polyethylene apparently has only a mechanical bond to the paper, its adhesion is satisfactory for most needs. If care is used in pretreating the paper and choosing the proper raw stock, polyethylene coatings can be made that will resist the pull of high tack rubber dispersions. Heat seals also can be made that are stronger than the base stock.

Heat Sealing

Polyethylene coated paper can be heat sealed on most types of equipment provided attention is paid to the three basic factors necessary to make a good seal. These factors are temperature, pressure and dwell time. Their adjustments depend on the type of coating, thickness of the paper and machine speed.

Experiments on a pilot machine indicate that satisfactory seals can be made at temperatures of 325-350°F. and web speeds approximating 40 ft. per minute. If the seal is cooled it rapidly gains strength. Seals made by either method withstand boiling water and when pulled will tear the paper fiber.

Inertness

Polyethylene is very inert and because of this quality polyethylene coated papers resist attack by most acids, alkalies and salt solutions. At normal temperatures it appears to be the most resistant of all plastics. In addition, its nonreactivity and insolubility maintain the packaged product in a pure and uncontaminated condition.

Coverage

Polyethylene, because of its low specific gravity, has the highest coverage of any plastic. One pound of resin, 1 mil thick, will cover an area of 30,000 square inches. This is a further ideal quality because coverage or yield are more important than price per pound.

End Use Requirements

A problem which as yet remains unsolved is the tailoring of the coated sheet to meet exactly the end use requirement. There has been in the field a great deal of confused thinking and coated sheets are sold with little regard to the end use on a 1 or 1½ mil coating thickness. The first use that comes to mind is the field where it is simply necessary to keep a material free from fiber. Resins for molding such as Lucite, polyethylene, chemicals such as ammonium nitrate and other fertilizers that are corrosive to paper and sticky compounds such as glue require only a film sufficient to cover the fiber for their protection. In fields where the material is both hygroscopic and corrosive films would be required depending of course on the degree of moisture protection necessary to preserve the packaged material. It is in the interest of the user that for reasons of economy his container or package be engineered for his specific material in mind. An example is the development of a package for United States Tobacco Company where it was much more economical to obtain a low watervapor transmission rate by combining a polyethylene coated paper to foil. To have applied sufficient polyethylene to the paper to meet this end use would have been entirely out of reason from a cost standpoint. In this case the polyethylene sealed the fiber and prevented the wicking of moisture while the foil in addition to its moisture vaporproof qualities imparted the folding characteristics necessary for a good packaging machine operation.

Use

In the manufacture of fiber drums where cleanliness, moisture protection and non-reactivity with the packaged material are desired, polyethylene

(Continued on page 38)

Excerpts from a paper presented to the Packaging Conference of the American Management Assn., N. Y., at the Navy Pier, Chicago, Ill., April 24-27, 1950.

FINANCIAL RECORD

PREFERRED STOCKS	Per Share Earnings Calendar Year 1949	Per Share Earnings 12 Mo. to Approx. 3/31/50	Indic. Annual Divid. Rate	June 19 Approx. Market Price
Armstrong Corp Co. $3.75 Cum.	**$48.95***	**$ —**	**$3.75**	$104⅛
Armstrong Cork Co. $4.00 Cum. Conv.	**40.95***	**—**	**4.00**	117⅜
Celotex Corp. 5% Cum.	6.80c	8.27g	1.00	16¾
Champion Paper & Fibre $4.50 Cum.	**60.09f**	**—**	**4.50**	105
Container Corp. of Amer. 4% Cum.	**89.52**	**$92.76**	**4.00**	105½
Crown Zellerbach $4.20 Cum.	54.38c	—	4.20	104⅛
Dixie Cup Co. $2.50 Cum. Conv. Cl. A	10.93	11.41	2.50	53
Flintkote Co. $4 Cum.	62.70	65.47	4.00	105½
Robert Gair Co., Inc. 6% Cum.	11.48	8.49	1.20	18⅜
International Paper Co. $4 Cum.	224.55	235.34	4.00	107½
Kimberly Clark Corp. 4¼% Cum.	85.27	99.12	4.50	107⅝
Kimberly Clark Corp. 4% Cum. Conv. 2nd	50.65*	58.80	4.00	147
MacAndrews & Forbes 6% Cum.	61.59	61.09	6.00	140
Mead Corp. 4¼% Cum.	51.37	53.61e	4.25	89
Mead Corp. 4% Cum. Conv. 2nd	21.35*	22.62*e	2.00	45¼
Paraffine Cos. Inc. 4% Cum. Conv.	56.46	47.70	4.00	100½
Rayonier Inc. $2 Cum.	9.54	10.03	2.00	34⅛
St. Regis Paper Co. 4.40% 1st A	30.74	30.19	4.40	86½
Scott Paper Co. $3.40 Cum.	51.15*	56.23*	3.40	100¼
Scott Paper Co. $4.00 Cum.	51.15*	56.23*	4.00	108½
Sutherland Paper 4¼% Conv.	46.92	50.62	4.25	110⅞
U. S. Gypsum Co. 7% Cum.	**283.37**	**300.73**	**7.00**	185¼
United Wallpaper Inc. 4% Cum. Conv.	2.14	(d)8.00	2.00	24¼
West Virginia Pulp & Paper 4½% Cum.	61.28c	—	4.50	109⅞
COMMON STOCKS				
APW Products Co.	(d)0.81	(d)0.58	—	4½
American Writing Paper Corp.	**.04**	**$0.15**	**—**	6⅞
Armstrong Cork Co.	**6.57**	**—**	**$3.00**	50½
Celotex Corp.	1.65c	2.06g	1.00	18⅛
Certain-Teed Prods. Corp.	2.84	3.00	1.00	16⅞
Champion Paper & Fibre	5.15f	—	2.00	37¼
Congoleum Nairn Co.	3.04	—	2.00	27⅜
Container Corp. of America	8.46	8.77	4.00	48⅜
Crown-Zellerbach	6.02c	—	2.00	34¾
Dixie Cup Co.	7.44	7.85	1.50	43⅜
Eastern Corp.	0.04	0.87	—	14¼
Flintkote Co.	4.33	5.52	2.50	29¼
Robert Gair Co., Inc.	1.31f	1.22f	0.70	8⅜
Great Northern Paper Co.	4.87	4.19	2.80	40¾
International Paper Co.	7.12	7.47	2.50	47¼
Johns-Manville Corp.	4.83	5.15	2.50	48¼
Kimberly Clark Corp.	**5.29**	**6.19**	**1.80**	56⅛
MacAndrews & Forbes Co.	3.64	3.61	3.00	40½
Marathon Corp.	3.29c	3.56g	1.40	32½
Mead Corp.	4.10	4.28e	1.60	22¼
National Container Corp.	0.95	1.08	0.60	7⅜
Paraffine Cos. Inc.	0.85	0.71	0.60	16¾
Rayonier, Inc.	4.75	5.06	2.00	32½
Ruberoid Co.	8.72	9.44	3.25	58¼
St. Regis Paper Co.	0.91	0.87	0.60	8¼
Scott Paper Co.	6.07	6.65	3.60	92¾
Sutherland Paper Co.	4.62	4.88	2.50	40½
Union Bag & Paper Corp.	5.01	5.12	2.25	31¾
United Board & Carton	(d)1.61b	(d)0.84g	—	8⅞
U. S. Gypsum Co.	13.51	14.35	9.00	128
United Wallpaper	(d)0.01	(d)0.32	—	3⅜
West Virginia Pulp & Paper	8.58c	9.37g	3.00	52½

(a) 12 months to approximately 2/4/50
(b) Year ended 11/13/49
(c) Year ended 1/31/50
(d) Deficit
(e) 12 months to 3/19/50
(f) 9 months to 12/31/49
(g) 12 months to approximately 4/30/50
(*) Earnings per combined preferred shares.
(†) Not including full earnings of Gair Co., Ltd. nor 60% interest of Robert Gair Co., Inc. in Southern Paperboard Corp.

Canadian Pulp & Paper Securities

TORONTO, Ont. — Even a casual observer of the stock market can hardly escape noticing the upward surge of pulp and paper securities to new high levels in the current bull market. A little closer observation will disclose, however, that there are a number of factors operating to support the general optimism of the industries involved.

Strength of demand for Canadian newsprint from the United States is perhaps the most outstanding factor in the general optimism. Due to some unfavorable factors in the general outlook for business across the border, the continuing and ever-increasing demand for more newsprint was not wholly expected. Moreover, the loss of business to Canadian mills due to the monetary conditions in Europe turned out to be less serious than had been expected. There has been some return of business from former overseas customers and pulp and paper mills in Canada are again working at full capacity. Pulp of all types is in stronger demand with a consequent firming of prices. Third quarter prices are expected to be up around $5 to $7 a ton for bleached and unbleached grades of both kraft and sulphite. There have already been some increases in some grades and Scandinavian prices for the third quarter are to be up about 20 percent, whereas they had been a little below U. S. quotations.

Another factor in the brighter outlook of the industry has undoubtedly been the improved financial position of most of Canada's pulp and paper companies, particularly respecting the vastly improved debt position of many of them.

Among the companies which have issued statements on first quarter results, all have shown improvement over the corresponding period of 1949. International Paper reported gross sales of $113.3 millions, against $111.1 millions a year ago, and net profit equal to $2.26 a common share, as against $1.91 a year ago (taking split into account). St. Lawrence first quarter net profit was $1,436,610, as against $777,359; Great Lakes $403,578, against $361,819; Minnesota & Ontario, $965,824, against $881,054; Bathurst Power & Paper $987,410, against $901,675.

A *Financial Post* comparison of the current debt position of 10 of the country's leading pulp and paper companies, with the situation as it was at the end of 1945, reveals the progress that has been made in this regard.

Funded debt: Cut from $199,391,000 to $99,871,000, a reduction of 50 percent.

Interest charges: Down from $9,826,000 to $3,758,000, or 62 percent.

The average coupon rate has also shown a marked decline, with the current average at 3.76 percent, against 4.94 percent at the end of 1945.

At the end of 1945 the total net profits of these 10 leading companies was less than $20 millions. Last year, their net profits totaled over $100 millions, and indications are that this showing may be improved in 1950.

The above favorable showings should be ample justification for pulp and paper stocks outrunning all others in the current upward surge of the market. A year ago, the index for the same 10 paper stocks used in the Montreal Stock Exchange averages was around the 260 mark. It hit 495.73 on June 2, a 90 percent increase. In the same period, the general industrial index went from 112.7 to 155, an increase of about 40 percent.

Abitibi common, which sold as low as $9.75 a share a year ago May, is selling around $32. Consolidated Paper, $13.50 a share last June, is around $25. International Paper, before it was split two-for-one last December, sold as low as $41.88. Now, after the split, the new shares are selling around the $49 mark.

Fine papers have also been increased in price in Canada and companies report a high level of demand.

PRICES

The prices below reflect general market quotations at the mill level on the standard grades in which the normal volume of business is being done. Does not include occasional spot offerings.

NEW YORK

Delivered Ports

Standard News, per ton—

Rolls, contract	$100.00/ —
Sheets	115.00/ —

F.o.b. Mills. Carload freight allowed, dock N. Y.

Kraft— per cwt., 40# base wgt.

Standard Wrapping Rolls	$6.50/ —
No. 1 Wrapping Rolls	7.25/ —
Standard Bag	6.25/ —

Tissues—per ream 24x36 (480) 10 lbs. 2500 lbs. or more

Wh. No. 1 Frd.	$1.40 / 1.55
Wh. No. 1 MG	1.40 /
Wh. No. 1½	1.30 / 1.35
Wh. No. 2	1.15 / 1.20
Kraft Non-Tar	1.25 /
White Non-Tar	1.52½/

Toilet— per case of 100 rolls—1 M sheets.

Unbleached 4½x4½	$5.75/ —
Bleached 4½x4½	6.95/ —
Bleached 4½x5	8.80/ —
Per Case of 50 rolls—2000 sheets	
Unbleached 4½x4½	$5.75/ —
Bleached 4½x4½	6.80/ —
Per Case of 100 rolls—1000 sheets	
Facial, 4½ x 5, 2 ply	$8.95/$9.45

Paper Towels—per case of 3750.

Wh. Jr. M'tif'd 9¼x9½	$5.25
Br. Sr. M'tif'l 10x12	3.60
Br. Jr. M'tif'd 9½x9¾	3.10
Br. Jr. Sgl. fold 10x10¾	3.15
Blchd. 7½ x 11, 24/25 rolls	$3.95/$6.25

Manila, per cwt.

No. 1 Jute Tag sheets*	$15.05/$17.50
Reg. Jute M.F. 40-lb., sheets*	13.50/ 15.50
Wrapping Manila	8.75/ 10.50
Printing Manila	10.00/ 11.00

* Less usual allowance for rolls.

WORLD WOOD PULP MARKETS

Second Quarter Contract Price, Per Short Air-Dry Ton

	Delivered, with varying freight allowance		Full freight allowance‡ On dock Atlantic Ports		
	U. S.	Canadian	Swedish	Finnish	Norwegian
Groundwood	$65.00/ —	$65.00/ —	$60.00/ 62.50*		
Sideruns Pulping News	65.00/ —	65.00/ —			
Soda, Bleached	115.00/ —	115.00/ —			
Sulphate, Bleached	118.00/126.00	126.00/ —	125.00/128.00		Competitive
Sulphate, Unbl'd North'n		82.50/105.00	85.00/ —	85.00/ —	
Sulphate, Unbl'd South'n	82.50 /85.00				
Sulphite Blchd. (S'ftw'd)	118.00/123.00	118.00/ —	118.00/124.00	115.00/ — *	Competitive
Sulphite, Blchd. (H'dw'd)	118.00/ —				
Sulphite, Unbleached	100.00/ —	100.00/ —	100.00/105.00	100.00/ —	
Sulphite, Unbl'd (Glassine)	105.00/ —	103.00/ —	104.00/105.00		

* On dock. ‡ Ex dock quotations average $5.00 lower.

Third Quarter Contract Prices, Per Short Air-Dry Ton

	Delivered, with varying freight allowance		On dock Atlantic Ports		
Sulphate, Bleached	122.00/137.50	131.00/ —	*130.00/137.00†		*129.00/ —
Sulphate, Unbl. Northn.		95.00/105.00	*90.00/ 97.50†		
Sulphate, Unbl. Southn.	90.00/ 95.00			* In	
Sulphite, Blchd. (Sftwd.)	122.00/123.00	125.00/ —	*125.00/128.00†	Competitive	Competitive
Sulfite, Semi-blchd.	112.00/ —			range	
Sulphite, Unblchd.		107.00/ —	107.00/110.00†		
Sulphite, Unbl'd (Glassine)		110.00/ —	111.00/ — †		
Soda, Blchd.	120.00/122.00	122.00/ —			

* On dock. † Delivered.

Gummed Tape—per bdl., 500 bdls. or more.

60-lb. 600 ft. GSI	$ 5.25/$ 5.40
35-lb. 800 ft. GSI	6.05
35-lb. 500 ft. GSI	4.66
35-lb. 500 ft. GSO	4.53

Boards, per ton—*

Filled News	$67.50/$72.50
Plain Chip	65.00/ 70.00
Blchd. Mla, L-d. Chip	97.50/ —
White Pat. coated	110.00/115.00
Kraft Liners 42 lb.	100.00/
Kraft Corr. .009	105.00/
Binders Boards	110.00/116.00

* Base Prices per 10 tons. Less than 10 ton but over 3 tons, add $2.50; three tons or less, add $5.

WASTE PAPER MARKET

The following quotations were gathered from major dealers in each market. They are an indication of the price range in which volume tonnage was moving on the date specified. Spot offerings or special packings are not necessarily included. Prices to mills, per ton, f.o.b. cars shipping point (includes brokers' fee.)

	New York June 10	Philadelphia June 12	Boston June 10	Chicago June 2
No. 1 Mixed Paper	$9.00/ 11.00	$10.00/ 12.00	$8.50/ 9.00	$10.00/ —
Boxboard Cuts	8.00/ 9.00	8.00/ 9.00	7.00/ 9.00	13.00/ —
Mill Wrappers	10.00/ 11.00	10.00/ 13.00	8.50/ 10.00	12.00/ —
No. 1 News	9.00/ 11.00	6.00/ 8.00	8.50/ 10.50	14.00/ —
Over-issue News	13.00/ 14.00	12.00/ 15.00	12.00/ 14.00	17.00/ —
Corrugated Containers	19.00/ 21.00	25.00/ 27.00	16.50/ 21.00	18.00/ —
New Corrugated Cuts	20.00/ 21.00	21.00/ 23.00	20.00/ 23.00	22.00/ —
Double Kraft Ld. Corr. Cuts	35.00/ 37.00	32.00/ 37.00	36.50/ 40.00	42.00/ —*
Used Kraft Bags	30.00/ 34.00	27.50/ 32.00	25.00/ 30.00	25.00/ —
No. 1 Brown Kraft Paper	32.00/ 35.00	32.00/ 37.00	25.00/ 35.00	25.00/ —
Super Resorted Br. Kraft	37.50/ 40.00	40.00/ 42.00	35.00/ 40.00	35.00/ —
New Br. Kraft Env. Cuts	70.00/ 75.00	60.00/ 65.00	65.00/ 70.00	65.00/ —
New Br. Kraft Cuts	55.00/ 60.00	50.00/ 52.00	50.00/ 55.00	60.00/ —
No. 1 Gdwd. Shvs.	25.00/ 30.00	25.00/ 30.00	30.00/ 35.00	22.00/ —
White Newsblanks	55.00/ 60.00	55.00/ 60.00	50.00/ 60.00	50.00/ —
No. 1 Flyleaf Shvs.	27.50/ 30.00	28.00/ 32.00	40.00/ 50.00	35.00/ —
No. 1 Soft Wht. Shvs.	65.00/ 70.00	65.00/ 75.00	65.00/ 70.00	65.00/ —
Super Soft Wht. Shvs.	90.00/ 95.00	80.00/ 85.00	85.00/ 95.00	75.00/ —
Hd. Wht. Shvs.	85.00/ 90.00	85.00/ 90.00	85.00/100.00	80.00/ —
Hd. Wht. Env. Cuts	100.00/110.00	100.00/110.00	100.00/115.00	95.00/ —
New Manila Env. Cuts	65.00/ 70.00	60.00/ 65.00	60.00/ 70.00	55.00/ —
Col. Tab Cards	40.00/ 42.50	37.50/ 42.00	35.00/ 45.00	37.00/ —
Manila Tab Cards	70.00/ 75.00	70.00/ 75.00	60.00/ 70.00	65.00/ —
No. 1 Mixed Ledger	30.00/ 32.50	30.00/ 32.50	33.00/ 37.50	37.00/ —
White Ledger	45.00/ 50.00	45.00/ 50.00	40.00/ 50.00	42.00/ —
Mixed Books & Mags.	13.00/ 15.00	12.00/ 14.00	12.00/ —	15.00/ —
No. 1 Rep'd Hvy. Books & Mags.	25.00/ 30.00	22.00/ 25.00	24.00/ 28.00	25.00/ —

* f.o.b. or delivered.

The following prices are representative distributors' resale prices:

Rag Content Bonds and Ledgers—
White, 20 lb.

Bonds	4 Ctns. per cwt.
100% Rag Ex. No. 1	$54.45/ 55.55
100% Rag	47.05/ 47.55
75% Rag	35.15/ 36.80
50% Rag	29.40/ 30.35
25% Rag	25.75/ 26.75

Ledgers	4 Ctns. per cwt.
100% Rag Ex. No. 1	$55.70/$57.60
100% Rag	48.30/ 48.90
75% Rag	37.65/ 38.05
50% Rag	30.70/ 31.70
25% Rag	27.15/ 28.05

Sulphite Bonds and Ledgers
White, 20 lb.

Bonds	4 Ctns. per cwt.
Watermarked	$16.75/$17.70
Plain	15.60/ 16.10

Ledgers	4 Ctns. per cwt.
Watermarked	$18.20/ 19.00
Plain	17.25/ 17.30

White Book

Conversion Coated	Case per cwt.
No. 1	$19.75/$21.15
No. 2	19.25/ 19.90
No. 3	17.75/ 19.15
Machine Coated	
No. 1	16.40/ 16.65
No. 2	14.40/ 15.15
Uncoated	
No. 1 Antique (Watermarked)	16.40/ 17.90
Offset	15.15/ 16.65
A Grade E. F.	13.50/ 15.65
A Grade S. C.	15.90/ 16.15
B Grade E. F.	14.90/ 15.15
B Grade S. C.	15.40/ 15.65

‡ Indicates a price change.

Rag Market

New Domestic Cotton Cuttings
(Prices to Dealers, F.o.b. Ship. Pt.)

	Per 100 lbs.
White Shirt	$10.50/ $11.25
Unbleached Muslin	10.50/ 11.25
Light Silesias	6.75/ 7.75
White Back Blue Overalls	6.00/ 6.50
Blue Overalls	4.50/ 5.00
Fancy Shirt	4.75/ 5.00
Percales	5.50/ 6.00
Light Prints	5.25/ 5.75

No. 1 Washables	2.50/	2.75
Bleachable Khaki	4.50/	5.00
Unbleachable Khaki	3.75/	4.50
Cottonades	4.00/	4.75
Lt. Flannelettes	6.75/	7.50
Men's Corduroy	3.25/	3.75
Women's Corduroy	2.75/	3.25
Canton Flannels, Bichd.	8.75/	9.25
Underwear Cutters, Bichd.	10.50/	11.00
Underwear Cutters, Unbichd	10.25/	10.50

Old Domestic Cotton Rags

(Prices to Dealers, f.o.b. Ship. Pt.)

	Per 100 lbs.	
No. 1 Whites, Repacked	$4.25/	$4.75
No. 1 Whites, Miscellaneous	3.00/	3.50
No. 2 Whites, Repacked	3.00/	3.25
No. 2 Whites, Miscellaneous	2.75/	3.00
Cotton Pants & Overalls	2.25/	2.75
Thirds and Blues, Repacked	2.25/	2.50
No. 1 Roofing Rags	1.20/	1.30
No. 2 Roofing Rags	1.10/	1.20
No. 3 & 4 Roofing Rags	1.00/	1.10
Roofing Bagging	1.00/	1.10

New Foreign Cotton Cuttings

(Prices to Mills, f.o.b. Dock, N. Y.)

	Per 100 lbs.	
New Dark Cuttings	$2.75/	$3.00
New Mixed Cuttings	2.75/	3.00
Light Silesias	6.50/	7.00
Light Flannelettes	5.50/	6.00
New White Cuttings	10.00/	10.50
New Unbleached Cuttings	10.00/	10.50
Fancy Shirt Cuttings	4.50/	4.75
Light Prints	4.00/	4.25
Bleachable Khaki, No. 1	4.25/	4.50
Unbl. Khaki, No. 1	3.50/	4.00

Old Foreign Rags

(Prices to Mills, f.o.b. Dock, N. Y.)

	Per 100 lbs.	
No. 1 White Cottons	$6.50/	$7.00
No. 2 White Cottons	5.50/	6.00
No. 3 White Cottons	3.50/	4.00
No. 4 White Cottons	3.00/	3.50
Extra Light Prints	4.50/	5.00
Old Light Prints	4.00/	4.25
Med. Light Prints	2.50/	2.75
Dutch Blue Cottons	3.25/	3.50
Checks and Blues	2.75/	3.00
Linsey Garments	2.10/	2.40
Dark Cottons, European	2.00/	2.10
Dark Cottons, Egyptian	1.85/	2.00
Old Shoppertes	1.75/	1.85
New Shoppertes	2.00/	2.25

Bagging

(Prices to Dealers, f.o.b. N. Y.)

	Per 100 lbs.	
Foreign Gunny	$5.50/	6.00
Domestic Gunny, No. 1	5.50/	6.00
Heavy Wool Tares	6.00/	6.25
Foreign Manila Rope	4.00/	4.25
Domestic Manila Rope	5.00/	5.25
Jute Strings	5.50/	5.75
No. 1 Sisal Strings	3.00/	4.00
Mixed Strings	Nominal	
Paper Mill Tares	3.50/	4.00
No. 1 Scrap Burlap		
Foreign	4.00/	4.25
Domestic	4.75/	5.00
Austr. Wool Pouches	—/	6.00
New Burlap Cuttings	5.50/	6.00

MATERIALS

Aluminum, sulfate:		
comL bags, wks. cwt.	1.50	
iron free cwt.	2.75	
Alcohol, ethyl:		
tax free, dns. c.l. gal.	.45	
deld. East Miss.		
Casein, acid prec.:		
dom. sh. pt. c.l. lb.	.21	.23
imp. ex dock lb.	.13½	.22
Caustic soda:		
c.l. wks. solid, 76%, cwt.	3.05	
dak. & grd. 400-lb. drums	3.45	
100-lb. drums	3.95	
liquid 50% tanks	2.40	
liquid 73% tanks	2.50	
China clay:		
dom. air-float. filler, c.l. wks. ton	10.00	
water-washed	11.00	
coating	16.30	/30.00
imported, ex whse. short ton	15.20	/28.35
Chlorine:		
single-unit tanks, works cwt	2.40	
multi-unit cwt.	2.90	/ —
	4.10	/ —
Formaldehyde:		
USP, inb. dns. c.l. wks. lb.	.0570	
l.c.l. E. wks	.0620	
Fuel oil:		
Bunker C, No. 6 Cal. hvy		
tanks, refinery bbl.	1.25	/ 1.55
light bbl.	1.65	/ 2.10
Hydrogen peroxide:		
USP, 35% cbys. E of Miss. lb.	.23½	
Lime:		
hydrated, bags, wks. Buffalo ton	13.50	
Rosin:		
B gum, drms, c.l. Savan cwt.	4.10	
G, H, I, K, gum, do cwt.	4.92	
FF wood, do cwt.	4.60	
Rosin size:		
70% gum & pale grds, tank cars, south, sh. pt. cwt.	4.45	/ 4.75
Salt cake:		
dom. bulk, c.l. contract del'd ton	18.00	/20.00
wks. frt. all ton	22.00	/ —
Soda ash:		
light, 58%, bags, wks. cwt.	1.25	
bulk cwt.	1.00	
Sodium silicate 40°:		
turbid, c.l. wks. cwt.	1.05	
l.c.l. wks.	1.25	/ 1.35
Sodium peroxide:		
dns. c.l. E. of Miss. lb.	.18	
l.c.l. do lb.	.18½/	.19
Soybean, protein:		
chem. isol, wks. c.l. lb.	.20	/ .20½
Cinn. and Chic.		
Sulfuric acid:		
60° Be. cbys. c.l. cwt.	1.40	
E. wks.		
l.c.l. cwt.	1.80	/ 2.50
Sulfur:		
crude c.l. mines, contract, long ton	18.00	
f.o.b. vessels Gulf	19.50	
Export, f.o.b. Gulf	22.00	
Sulfur dioxide:		
liquid, coml. cyl. wks. lb.	.09	
multi-unit cars lb.	.0535	
Starches		
pearl corn, bags, c.l. Chic. cwt.	5.17	/ —
white dextrines, c.l. Chic. cwt.	6.44	/ —
potato, Idaho, c.l. wks. cwt.	5.00	/ —
potato, Maine, c.l. wks. cwt.	5.25	/ —
tapioca, conv. dextrines cwt.	7.50	/ 8.00
medium grds. Gulf ports	6.25	/ 6.50
low, Siam, on dock NY	4.25	/ 5.25
Talc:		
domestic, 50-lb. sacks, c.l. wks. ton	23.00	/28.00
Titanium dioxide:		
anastase, c.l. deld., bags. lb.	.19½	
l.c.l. deld. lb.	.20	
rutile, c.l. deld. lb.	.21¼	
l.c.l. deld. lb.	.22½	

N. B.: For special market conditions, see *Trends*.

IMPORTS

IMPORTS AT NEW YORK

Week Ending June 17

Newsprint

News Syndicate Co., Ethel Tomba, Gatineau, 310 rolls.

Bowater Paper Co., Fort Avalon, Cornerbrook, 3,636 rolls.

(——), Markland, Liverpool, N.S., 4,118 rolls, (2,604 rolls Alexandria, Va.)

Gilman Paper Co., Kristina Thorden, Hallstavik, 102 rolls.

R. A. Olsen, Kermic, Domacona, 325 rolls.

Wrapping Paper

Jay Madden Corp., Mormacelm, Helsingfors, 156 rolls.

Boxboard

Jay Madden Corp., Mormacelm, Helsingfors, 58 rolls (folding).

Tissue Paper

Stevens Nelson Paper Corp., Laura Maersk, Kobe, 10 cs.

Writing Paper

H. W. Robinson & Co., Queen Elizabeth, Southampton, 8 cs.

Wallboard

G. S. Hedsborg & Son, Black Tern, Antwerp, 1 cs.

Strawboard

Miltenberg & Samton, Noordam, Rotterdam, 3 rolls.

L. A. Briteau Co., Noordam, Rotterdam, 1 pkge.

Fibreboard

M. M. Elish, American Counselor, Antwerp, 8 bls.

Rags, Baggings, etc.

A. de Vries Trading Corp., Black Tern, Antwerp, 183 bls. scrap bagging.

Royal Manufacturing Co., Black Tern, Rotterdam, 54 bls. cotton waste.

(——), N. Amsterdam, Rotterdam, 92 bls. cotton waste.

Brandwein Mazur Co., Pres. Monroe, Bombay, 400 bls. cotton waste.

Camden Fiber Mills, Pres. Monroe, Bombay, 200 bls. cotton waste.

M. O. Schimmel, Noordam, Rotterdam, 77 bls. cotton waste.

Spector Woolstock Corp., Kristina Thorden, Gothenburg, 75 bls. jute bagging.

Textile & Paper Supply Corp., Kristina Thorden, Gothenburg, 96 bls. cotton waste.

E. J. Keller Co., Inc., Steel Artisan, Bombay, 100 bls. old jute rags.

Lush Cotton Products Co., Steel Artisan, Bombay, 200 bls. cotton waste.

Castle & Overton, Inc., Exchequer, Tuticorin, 100 bls. gunny rags.

Lush Cotton Products Co., Exchequer, Bombay, 200 bls. cotton waste.

Brandwein Mazur Co., Exchequer, Bombay, 100 bls. cotton waste.

M. O. Schimmel, Exchequer, Bombay, 200 bls. cotton waste.

Padawer Waste & Fiber Co., Exchequer, Bombay, 100 bls. cotton waste.

1st National Bank of Boston, Exiria, Venice, 184 bls. old jute bagging.

Goldman Trading Co., Exiria, Leghorn, 110 bls. nylon rags.

National Bank of Detroit, Borealis, Naples, 54 bls. gunny bagging.

Chemical Bank Trust Co., Borealis, Genoa, 188 bls. hemp rags.

S. H. Waldstein, Borealis, Genoa, 109 bls. cotton waste.

Woodpulp

Pagel Horton & Co., Inc., Kristina Thorden, Husum, 5,944 bls. dry unbleached sulphate pulp.

N. Y. State College of Forestry, Kristina Thorden, Husum, 1 bl. dry bleached sulphite pulp, 1 bl. dry sulphite pulp.

F. Frankel Corp., Exiria, Trieste, 3,056 bls. woodpulp.

Price & Pierce, Ltd., Stavangerfjord, Oslo, 375 bls. bleached sulphite pulp.

The Borregaard Co., Inc., Stavangerfjord, Oslo, 250 bls. dry bleached sulphite pulp.

Woodpulp Boards

Parsons & Whittemire, Inc., Kristina Thorden, Gothenburg, 86 rolls.

Jay Madden Corp., Mormacelm, Helsingfors, 60 rolls (solid white).

Woodflour

Monsanto Chemical Co., Kristina Thorden, Gothenburg, 1,940 bags.

IMPORTS AT NEWARK

Week Ending June 17

Perkins Goodwin & Co., Krageholm, Norrsundet, 500 bls. dry sulphate pulp, 101 tons.

Cellulose Sales Co., Krageholm, Ostrand, 750 bls. kraft sulphate pulp, 125 tons; 300 bls. dry sulphite pulp, 50 tons; 700 bls. sulphite pulp, 127 tons; 170 bls. air dry sulphite pulp, 34 tons.

Cellulose Sales Co., Krageholm, Kramfors, 2,400 bls. sulphite pulp, 457 tons.
Pulp & Paper Trading Co., Krageholm, Kramfors, 152 bls. 2nd quality strong sulphite pulp, 25 tons.
Cellulose Sales Co., Krageholm, Kramfors, 175 bls. dry sulphate pulp, 25 tons.

IMPORTS AT ALBANY

Week Ending June 17

Perkins Goodwin & Co., Krageholm, Norrsundet, 1,250 bls. dry sulphate pulp, 275 tons.
Price & Pierce, Ltd., Krageholm, Wallvik, 5,910 bls. dry woodpulp, 1,000 tons.
Cellulose Sales Co., Krageholm, Ostrand, 900 bls. kraft sulphate pulp, 150 tons; 1,500 bls. dry sulphite pulp, 250 tons; 125 bls. air dry sulphite pulp, 25 tons.
Cellulose Sales Co., Krageholm, Kramfors, 750 bls. sulphate pulp, 125 tons; 1,698 bls. sulphite pulp, 283 tons.
Cellulose Sales Co., Krageholm, Soraker, 1,050 bls. dry sulphite pulp, 175 tons.
Pagel Horton & Co., Inc., Kristina Thorden, Hornefors, 3,018 bls. dry sulphite pulp.
Pagel Horton & Co., Inc., Kristina Thorden, Karskar/Gefle, 2,540 bls. woodpulp.

IMPORTS AT BOSTON

Week Ending June 17

Lush Cotton Products Co., Pres. Monroe, Bombay, 200 bls. cotton waste.
(——), Axledyk, Rotterdam, 54 bls. gluestock.
Cowa Trading Co., Borealis, Genoa, 59 bls. cotton picker waste.

IMPORTS AT PHILADELPHIA

Week Ending June 17

G. S. Hedsforg & Son, Black Tern, Antwerp, 1 cs. wallboard.
E. Whittaker, Kristina Thorden, Gothenburg, 4 bls. rags.
Philadelphia Inquirer, Kristina Thorden, Hallsvarik, 966 rolls newsprint.
Tradesmans National Bank, Exchequer, Port Said, 48 bls. cotton rags, 17 bls. bagging.
China American Paper & Pulp Co., Exiria, Trieste, 894 bls. chemical pulp.
Bank of America, Exiria, Trieste, 2,858 bls. unbleached sulphite pulp.
Gottesman & Co., Inc., S.S. Astra, Utansjo, Sweden, 17,100 bls. unbleached sulphite pulp; S.S. Bernhard Inglesson, Sprangsviken, Sweden, 426 bls. unbleached sulphite pulp.

IMPORTS AT NORFOLK

Week Ending June 17

A. de Vries Trading Corp., Black Tern, Antwerp, 89 bls. scrap bagging.
Loumar Textile By Products, Black Tern, Antwerp, 88 bls. old bagging.
E. J. Keller Co., Inc., Exchequer, Bombay, 140 bls. old jute rags.
National City Bank Exchequer, Bombay, 100 bls. old jute rags, 100 bls. jute rags.

IMPORTS AT BALTIMORE

Week Ending June 17

Carbon Web Corp., Kristina Thorden, Gothenburg, 66 rolls paper.
(——), Kristina Thorden, Husum, 1,830 bls. dry bleached sulphate pulp.
F. Fraenkel Corp., Exiria, Trieste, 1,936 bls. woodpulp.
D. Benedetto, Exiria, Genoa, 74 bls. old bagging.
Gottesman & Co., Inc., S.S. Uruguay, Iggesund, Sweden, 1,425 bls. semi-bleached kraft pulp.

IMPORTS AT LOS ANGELES

Week Ending June 17

New England Waste Co., Pres. Monroe, Bombay, 100 bls. cotton waste.
Castle & Overton, Inc., Pres. Monroe, Bombay, 100 bls. old jute rags.
Pacific Brokerage Co., Pres. Monroe, Genoa, 100 bls. wrapping paper.
Chase National Bank, Pres. Monroe, Genoa, 80 bls. old bagging.

Charged With Price Fixing

WASHINGTON, D. C. — Following a Federal Trade Commission complaint alleging conspiracy to fix prices, and discriminatory pricing practices, 16 corn products companies representing a major part of the corn derivatives industry have filed an agreement with the Commission to conform to its requirements, the Commission reported last week.

The complaint was issued against nine principal producers of corn derivatives, and seven sales subsidiaries of five of the major companies. Among them were starch companies and trade groups which latter were dissolved prior to the latest development.

SUPPLIERS

Hungerford & Terry Sales Conference

In accordance with the practice of the last few years, Hungerford & Terry, Inc., brought a group of its field representatives into its main factory at Clayton, N. J., May 24-27 for instructional work on its full line of Water Treating Equipment including latest developments in the field of automatic and semi-automatic zeolite water softening and total and split-stream demineralization.

Besides blackboard instruction and trips through its several manufacturing plants, the men were also shown a working model of the company's upflow slurry zone type Coagulator, automatic zeolite water softening equipment and other recently developed apparatus and zeolite products.

It is planned to bring another group of field representatives who could not attend the May conference into a similar get together some time during the month of October.

Black-Clawson Shartle-Dilts Promotes E. M. Root

E. M. (Ned) Root has been promoted to the position of Manager-Southern Sales of the three divisions of the Black-Clawson Co. Operating headquarters will be established in the heart of the Southern pulp, paper and converting industry.

Appleton Calender To Finland

APPLETON, Wis.—A super calender from the Appleton Machine Co. is considered the pride of the Kajaani Paper company, Kajaani, Finland.

The super calender is one of several pieces of American-manufactured equipment obtained by the mill recently in a large expansion program designed to bring facilities up to modern standards. The calender was shipped to Finland under the European recovery program. Until the machine was installed, the Finnish company was not equipped to produce paper with any degree of glaze.

Philippine Soda and Chlorine Plant

WASHINGTON, D. C. — Establishment of the first caustic soda and chlorine plant in the Philippine Islands is reported from Manila.

Negotiations for machinery and equipment are reported to be under way in this country with American suppliers.

The plant will represent an investment of $1 million and is expected to start operations later this year. Daily capacity is estimated at 5 metric tons of chlorine gas and caustic soda, each.

Hungerford & Terry, Inc., Clayton, N. J. Annual Sales Conference May 24-27, 1950

Front Row, Left to Right: Robt. Whitehead, Louisville, Ky.; A. Langberg, Eng. Specialist, Clayton, N. J.; J. A. Lange, Syracuse, N. Y.; F. G. Best, Cleveland, Ohio; C. A. Ogg, New York; H. Hungerford, Charlotte, N. C.; C. T. Bauer, Sales Staff, Clayton, N. J.; A. J. Nauta, Ass't Sales Mgr., Clayton, N. J. and F. C. Myers, Philadelphia, Pa. Back Row, Left to Right: H. D. Geschwindt, Secretary & Treasurer, Clayton, N. J.; B. M. Ross, Nashville, Tenn.; C. R. Ernst, New Orleans, La.; L. B. Porter, Rockford, Ill.; S. F. Alling, Vice President & Sales Mgr., Clayton, N. J.; D. M. Hungerford, Newark, Del.; C. J. Schultz, Troy, N. Y.; G. Lang, New York; C. Hungerford, Jr., President, Clayton, N. J.; W. Nathan, Milwaukee, Wis.; J. G. Reutter, Chief Engineer, Clayton, N. J. and H. R. Myers, Boston Mass.

NEW MATERIALS

Alkanolamine Sulfamates

Amine Sulfamates have known advantages as paper softeners; they depend less no moisture pick-up than other softeners. Alkanolamine sulfamates provide an additional advantage since they confer flame-retardant qualities to paper without the use of any auxiliary salt. Paper properly softened with an amine sulfamate will not support combustion nor will it glow after being removed from a flame, it is stated. In view of the increasing demand for flame-proofed paper used as towels, tablecloths, draperies, and decorations, this is an important fact. The amines are described as easy to prepare. They are made simply by neutralizing a water solution of the chosen amine with a combining equivalent of sulfamic acid. The paper converter may apply by single immersion of the sheet or by uniform mist or spray, followed by drying. In order to improve resistance to yellowing of paper treated with alkanolamine sulfamates, small amounts of modifying agents may be used. Additional information on mono-, di-, and triethanolamine, also diisopropanolamine is contained in booklet "Organic Nitrogen Compounds. Diethyl, triethyl, and isopropyl amines are described in technical information sheet "Alkyl Amines."

Calgon

Calgon is a vitreous sodium phosphate for the prevention of lime scale deposition by "threshold treatment" of the water. The phosphate is dissolved and the solution added continuously to the water. Effective concentrations have ranged from about 1 to 10 parts Calgon per million of water. Slightly higher concentrations have proved effective in eliminating deposition of other scale-forming salts such as calcium sulfate, calcium sulfite, and various salts of barium, as well as calcium carbonate, the manufacturer states. Typical applications of threshold treatment cited include prevention of lime-scale deposition in boiler feed water lines, caustic and hypochlorite bleaching in paper mills, water heating, recirculating cooling systems, multiple-effect evaporators, and after-precipitation following lime-soda softening.

Dipropionitriles

Three Dipropionitriles, recently made available, are suggested by the manufacturer for the purification of hydrocarbons and for the refining of tall oil, vegetable oils, and wood rosins. A technical bulletin describing these compounds has been published. Samples also are obtainable. The compounds, although excellent solvents for most organic compounds, are said to be immiscible with aliphatic hydrocarbons and to possess an unusual selectivity for aromatic compounds. Selectivity is demonstrated by the extraction of benzene of better than 90 percent purity from a mixture with benzene. Such separations as that of monomethylaniline from dimethylaniline, extremely difficult by other methods, may be successfully carried out using any of these compounds, it is stated.

Rampak

Rampak is an organic chemical compound—a *true solution*—developed to seal micro-porosity in all types of metal castings. Easily applied by internal pressure or vacuum, it packs into the pores and forms completely tight barriers by precipitating solids within the pores and pore channels, the manufacturer states. It is air-hardening and becomes dry enough to handle in three to five minutes. Subsequent pressure merely packs it in more tightly, it is said. It withstands pressure tests with its own solvent to 1000 psi for 48 hours. Pipe thread protectors, paper tubes, closures, etc., become entirely resistant to gasolines, acids, alkalis, alcohols, and other important destructive agents. It is said to resist rust because of its extremely low moisture vapor permeability. May be had with or without a plasticizer depending on what is to be resisted. Available in 1 or 5 gallon cans or 55 gallon OTS drums.

Alathon

Alathon is a polythene resin which, blended with wax, provides paper coatings having lacquer-like brilliance and improved resistance to water and grease and abrasion. The amount of the resin in the blend varies according to use from about 2 to 15 percent. Of interest to the chemical industry as packaging for materials that are acid or corrosive in nature; or that must be protected from moisture; or kept from drying out; or kept at a high degree of chemical purity by excluding dust or other contaminants. The food industry is utilizing to advantage the waterproofness and low water-vapor transmission rate of papers thus coated because of their freedom from taste, odor, or toxicity; their resistance to cooking oils and greases; and their toughness, even at low temperatures, the manufacturer states.

Resin 138

Resin 138 is designed so that papers will retain a high proportion of the resin and thus assure wet-strength efficiency. Besides imparting excellent wet-strength properties to paper, the resin improves dry-strength properties and acts as an effective size additive, it is said. Comes in solution ready to use, and may be added as received or diluted with water to any convenient concentration. No acid additions or aging periods required before using, and no special acid-resistant tanks necessary for handling the resin.

Polyamide Resin Suspensoids

Polyamide Resin Suspensoids are opaque white, water suspensions of the resins said to have distinct advantages over hot melts or solutions types. Although of medium viscosity, they contain a relatively high percentage of solids; they eliminate the need for using either expensive "hot melt" equipment or inflammable solvents in their application; make it possible to control the penetration of resin coatings into paper or other materials; and are relatively free of odor, it is stated. The Suspensoids are cationic. Described as remarkably stable, they will not coagulate even when subjected to repeated freezing and thawing. They heat seal and adhere firmly to a wide variety of materials, including fabrics, metals, paper, leather, plastic films and wood. Available in two grades: A-000, an essentially uncompounded Suspensoid, and B-200, which is modified to produce improved low-temperature heat-seal bonds, superior resistance to abrasion, and generally-improved adhesive characteristics. Like the resins, the suspensoids are expected to find their largest-volume use as heat-sealing coatings for paper and plastic films. Samples available for evaluation, also data sheet describing properties and suggested applications.

Quick Drying Waterproof Cement for Leather Belts

A method to shorten the "down time" on leather belt replacements has been developed. Using infra-red lamps and Alexander Q.D. Compound, the process is said to overcome the two most important problems in setting and drying, i.e., moisture in belt and atmospheric conditions. A battery of infra-red lamps held approximately 12 to 18 inches from the belt provides the necessary concentrated heat to dry the leather and cement efficiently. The lamps should be kept moving to distribute the heat evenly over the surface being dried. This method will decrease "down time" from the usual 4 to 6 hours to approximately 2 to 3 hours, it is claimed. The equipment consists of four 260 w. infra-red heating lamps. Lamps and reflectors, or lamps with built-in reflectors, should be mounted in a suitable support in a frame or rectangularly on 12 ins. centers.

Procedure to follow in making belts endless with infra-red equipment is, briefly:

1. Degrease machine oil from laps if present.
2. Prepare lap.
3. Dry moisture from belt with infra-red lamps.
4. Roughen leather and apply liberal sizing coat of Alexander Waterproof Cement, dry with infra-red lamps. This requires about four minutes.
5. Apply second sizing coat and repeat drying operation.
6. Apply pressing clamps and hold

plies of lap in contact about eight minutes.

7. Remove pressing blocks and dry with infra-red lamps on both sides of belt about 15 to 25 minutes, depending on the amount of moisture in the belt and general atmospheric condition of the mill. Belt should now be ready to operate.

If necessary to run a belt before two to three hours, Q.D. Compound can be applied and subjected to the infra-red treatment. To accomplish this, the beltman follows the same instructions as shown previously, with the exception that after Step No. 5 he includes the following — to be considered Step No. 5-A:

5-A. Apply with paint brush liberal coat of Alexander Q.D. Compound.

CAUTION: Infra-red lamps should be held anywhere from 12 to 18 ins from belt and moved continuously. Beltman using the lamps must exercise good judgment as to the length of time necessary to dry the leather and cement properly, as conditions will vary. A competent beltman will be able to tell when both leather and cement are ready for the next step.

Manufacturer will accept plant employes for factory training in all phases of leather belt repair and installation.

Dura-Tred Flintz

Dura-Tred Flintz is announced as a resurfacing compound for wood or concrete floor. Described as a ready mix of high melting point resins which combine chemically with a non-stone aggregate, it produces a floor which is hard and smooth over which trucks coast easily. None of the resins is below the 250° melting-point class, so that there is no summer softening, the manufacturer states. He claims that the material is extremely hard, easy to use, requires no undercutting, that it withstands salt and chlorides, also that it is standing up under heavy traffic of freight terminals.

New Literature

Electric Generator & Motor Co. Stock List No. 1622, "Guaranteed Rebuilt Motors and Generators." Complete specifications and technical data on all rebuilt apparatus.

Grinnell Co., Inc. Catalog wf-1950, "Seamless Carbon Steel Welding Fittings; Forged Steel Flanges." Designed for time saving and easy reference, it contains working specifications on Grinnell's welding fittings and flanges with illustrations.

The Federal Machine and Welder Co. Illustrated bulletins: "Powerful Ustrac," "Ustrac Speedigger," and "U. S. Tractor Tested Road and Farm Implements." Details the farming and commercial uses of equipment.

Hagan Corp. Bulletin 2150, "Differential Master Sender, High Pressure Type." Lists applications, outstanding construction features and operating characteristics.

Hewitt-Robins, Inc. Bulletin 129, "Conservo Air Hose." Explains the design, construction and rubber-compounds of Conservo.

Insul-Mastic Corp. Bulletin G 103-4-50, "Matchless Long-Term Protection." Shows the application of the Insul-Mastic Vinyl System in various installations.

The International Nickel Co. Technical Bulletin T-6, "The Resistance of Nickel and Its Alloys to Corrosion by Caustic Alkalies." Contains over 20 illustrations and 40 tables; gives methods of testing and results; discusses nickel alloy irons as well as the higher non-ferrous nickel alloys and pure nickel. Performances of the materials are quoted in a variety of fields.

Lyon-Raymond Corp. Bulletin No. 701, "Spacemaker Electric Tiering Truck." Lists and discusses in detail specifications of the various models, together with descriptions of many proven applications.

National Starch Products, Inc. Folder. Briefly describes National's operations and markets, what they make, where it is used and the many industries encompassed by their products.

PEDIGREED DOGS

COCKER SPANIEL — The smallest of the sporting dogs. While the most efficient of retrievers, his merry disposition and dressy coat make him a favorite pet.

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WALTER A. SALMONSON, *2514 Northeast 59th Ave., Portland, Oregon* L. L. GRIFFITHS, *Jr., Kalamazoo, Mich.*
HAROLD H. FISH, *Syracuse, N. Y.*

Polyethylene As a Paper Coating

(Continued from page 31)

coated board has enabled this industry to expand into new fields.

A host of miscellaneous items such as rubber interleaving papers, chocolate drop sheets, crown spots, freezer wraps, shelf liners and locker paper find polyethylene coated paper the solution to many of their age old problems.

In the packaging and storage of metal parts both for industry and the government where polyethylene coated paper is now an improved packaging material, volume has mounted steadily.

Polyethylene coated paper is a relatively new packaging material and opens new fields for all those interested in packaging new materials in containers heretofore only dreamed about. Do not use polyethylene coated paper as a substitute for some other materials or because it is plastic coated, but use it rather for its unusual properties and the protection it will give to the packaged material.

The ability to coat polyethylene in thin films onto paper by the so-called hot melt or hot laminating method was the impetus that made multiwall bags lined with polyethylene the largest single use for this coated paper. Paper coated with polyethylene is upgraded in tensile and tearing strength about 10 to 15 per cent. However, actual drop tests have proved that a polyethylene lined multi-wall bag is considerably stronger than an unlined bag of the same number of plies. The polyethylene lined multi-wall bag has opened new fields and such products as ammonium nitrate, fertilizer, glue, meat and ionic exchange resins have built this use up to 500,000 pounds per month. The bags are glued along the side seam with rubber dispersions and the ends sewn and taped. For greater water resistance the ends may be wax dipped.

Conclusion

It has been shown that when polyethylene is coated onto paper it comes the closest of any plastic to producing the ideal coated paper. It is resistant to more materials than any other plastic. Polyethylene coated paper has excellent water, watervapor and solvent resistance at normal temperatures. Its folding endurance and low temperature flexibility are also excellent. It rates highly where aging and non-support of mold growth are concerned. It is resistant to mineral oils and vegetable fats with certain limitations as to temperature. It is superior where toxicity, taste, odor and chemical inertness are concerned. The surface has only been scratched as far as polyethylene coated paper is concerned, and where there is a packaging problem of difficult solution it would be well to look at this miracle plastic.

AMERICAN PAPER AND PULP ASSOCIATION'S PAPER PRODUCTION RATIO REPORT

(Production as per cent of six-day capacity)

COMPARATIVE WEEKLY SUMMARIES

	May 13	May 20	May 27	June 3	June 10
1950	102.4	103.3	102.5	‡97.8	102.6
1949	*85.0*	*80.2*	*55.4*	*78.6*	*82.5*

	May 14	May 21	May 28	June 4	June 11
1950					
1949					

‡ Revised.

COMPARATIVE MONTHLY SUMMARIES

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year Avg.
1950	98.2‡	101.1‡	102.6‡	100.9‡	101.8‡								
1949	*94.6*	*92.8*	*89.1*	*85.1*	*82.7*	*78.6*	*72.8*	*87.6*	*89.7*	*96.0*	*98.2*	*90.4‡*	*88.0‡*

‡ Preliminary.

COMPARATIVE YEARLY SUMMARIES

	1943	1944	1945	1946	1947	1948	1949	1950
Year to Date	88.8	88.6	88.9	100.2	105.5	100.1	88.4	101.2
Year Average	87.8	88.1	89.4	100.1	104.3	96.2	‡88.6	

PAPERBOARD OPERATING RATIOS†

	May 13	May 20	May 27	June 3	June 10
1950	93	92	93	83	94
1949	*79*	*77*	*77*	*65*	*79*

	May 14	May 21	May 28	June 4	June 11
1950					
1949					

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year Avg.
1950	88	92	91	92	91								
1949	*88*	*85*	*79*	*79*	*78*	*75*	*64*	*86*	*87*	*94*	*93*	*83*	*85*

* All of the above data is based on tonnage reported to American Paper and Pulp Association. Does not include mills reporting to National Paperboard Association, except in isolated cases where both paper and paperboard are produced and separate tonnage figures are not readily available. Does not include mills producing newsprint exclusively.

† Per cents of operation based on "Inch-Hours" reported to the National Paperboard Association.

THWING - ALBERT

WALL TYPE

BASIS WEIGHT SCALE

Indicates ream weight of paper from a single sheet. Scale ranges from 25 grams to 200 pounds. Features anti-friction bearings and truss beam construction. Dead beat motion allows minimum oscillating. Also available as a differential scale. Ideal for moisture content determinations.

THWING - ALBERT

INSTRUMENT COMPANY

5366 Pulaski Avenue
Philadelphia 44, USA

184

OBITUARIES

Harold G. Findlay, 55, vice-president of United Paper Mills, Ltd., died after a lengthy illness at his home in Forest Hill Village, a suburb of Toronto, Ont., on June 14.

Gen. Thomas Stevens Hammond, chairman of the board, Whiting Corp., Harvey, Ill., passed away at his home in Chicago, Ill., on June 15.

Gen. Hammond was well-known in the business world. Entering the employ of Whiting Corp. in 1907 as assistant purchasing agent, he rose to be president and general manager. For the past several years he was chairman of the board. Always interested in trade associations, he served many different organizations.

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ASSOCIATIONS

Committee Appointments Of N.A.W.M.D.

Anthony Nicoletti, D. Benedetto, Inc., New York City, President of the Cotton Rag Council of the National Assn. of Waste Material Dealers, Inc., has announced appointment of committees for the ensuing year.

The Executive committee includes the following: James Derrico, The Derrico Co., Inc., New York City; A. L. Feierman, Arthur L. Feierman, Philadelphia, Pa.; Harris Goldman, Harris Goldman Co., Inc., New York City; David Golub, Charles Harley Co., San Francisco, Calif.; Julius Levine, Atlantic By-Products Co., New York City; J. F. Maggese, Rag Processing Co., Long Island City, N. Y.; Carlton B. Overton, Castle & Overton, Inc., New York City; Boris Petricoff, The Leshner Corp., Hamilton, O.; Arthur Rosenfeld, William Steck & Co., Inc., New York City; Joseph Schapiro, S. Schapiro & Sons, Inc., Baltimore, Md., and Jacob Solotken, J. Solotken & Co., Inc., Indianapolis, Ind.

Committees of the council include the following: New Cuttings — Mr. Schapiro, chairman; S. Irving Lippman, P. Garvan, Inc., Hartford, Conn.; Louis Marcovitz, Loumar Textile By-Products, Inc., New York City; Ezra Frankel, Frankel Bros. & Co., Inc., Rochester, N. Y.; Harold Eisenberg, J. Eisenberg & Sons, Inc., Brooklyn, N. Y.; Felix Dreyer, Lewm-Mathes Co., St. Louis, Mo.; Herbert Levy, Rag Processing Co., Long Island City, N. Y.; H. Maxman, S. Maxman, Philadelphia, Pa., and Mr. Solotken.

Mixed Rags—Messrs. Maggese and Solotken, co-chairmen; Arnold Epstein, Continental Paper Grading Co., Chicago, Ill.; Sam Rosen, Rosen Materials, Inc., New Orleans, La., and Harry Korman, Midwest Waste Material Co., Inc., Detroit, Mich.

Repackers and Brokers — Mr. Derrico, chairman; Messrs. Nicoletti, Petricoff, and Louis Gottlieb, Louis Gottlieb & Co., Brooklyn, N. Y.

Brokers Committee—Mr. Feierman, chairman; E. J. Keller, E. J. Keller Co., Inc., New York City; Mr. Goldman and John B. Hatkin, Robert Blank, Inc., New York City.

Rope, Strings and Bagging — Mr. Rosenfeld, chairman; Harry R. Woodward, Train Smith Co., Chelsea, Mass.; Mr. Marcovitz and Walter H. Martens, Geo. W. Millar & Co., Inc., New York City.

Cotton Rag Importers — Mr. Overton, chairman; Messrs. Keller, Marcovitz, Martens, Rosenfeld, Goldman, W. J. Green, W. J. Green Co., Inc., New York City; Herbert Stern, Rag Processing Co., Long Island City, N. Y., and Walter C. Clark, Darmstadt, Scott & Courtney, New York City.

Liaison with Waste Paper Institute —Messrs. Overton, Goldman, and White.

Kalamazoo Section TAPPI Fun Day

Left to Right: T. Luey, Corresponding Secretary; P. Nethercut, Recording Secretary; William Sparau, Treasurer; J. J. Harrison, Chairman; and John Dam, Vice-Chairman.

Kalamazoo T.A.P.P.I. Fun Day

KALAMAZOO, Mich.—The Kalamazoo Section of TAPPI held their annual fun day and election of officers at the Gull Lake Country Club on June 5. Over 150 people attended the meeting with nearly 100 playing golf.

The committee in charge of the meeting consisted of C. E. Mueller, Bulkley Dunton Co., chairman, and Richard Trelfa, Hercules Powder Co., C. B. Smith, Noble & Wood Machine Co., Wm. A. Honey, Stowe-Woodward Co., as committeemen.

Low gross score on the golf course was 77 with John Hayes and Joel Sheppard taking the honors. Bob Ronigen and George Gerpheide, Jr., won first prize in the shuffleboard contests and Walter Shaw ended the day with the most bogus money.

Election of officers was held in the evening after dinner with the following slate chosen: Chairman — James J. Harrison, Michigan Carton Co., Battle Creek; vice-chairman—John R. Dam, Allied Paper Co., Kalamazoo; recording secretary — Phillip E. Nethercut, Watervliet Paper Co., Watervliet corresponding secretary—Thomas A. Luey, Sutherland Paper Co., Kalamazoo; treasurer—Wm. J. Sprau, National Gypsum Co., Kalamazoo.

The Association of Pulp Consumers registered a strong protest against further reduction of paper tariffs. The officers of the association, shown above prior to testifying before the Committee for Reciprocity Information, are (left to right) Karl A. Clauson, Secretary of the association; William Beckett, Executive Vice-President of The Beckett Paper Co. and President of the association, Robert Evans, Director of Purchases, Riegel Paper Co. and Vice-President of the Association.

Dexter Forms Wood Importing Co.

WATERTOWN, N. Y. — The Dexter Wood Import Co., Inc., a Dexter Sulphite, Pulp & Paper Co. affiliate, has been incorporated under New York state laws to bring in by steamship from Canada to Black River Bay the Dexter Sulphite's annual supply of pulpwood.

It is estimated that at the beginning upwards of 25,000 cords of Canadian pulpwood from the provinces of Quebec and New Brunswick will be transported annually.

CLEARING HOUSE

HELP WANTED

MEN WANTED
POSITIONS OPEN

We can place working superintendent paper converting plant; carton printing supervisor; Fourdrinier machine foreman, must be good on groundwood papers and experience on sulphite specialties and crepe paper will be helpful.

Fourdrinier machine tender familiar with rag content papers; chemists and chemical engineers; cost accountant (South); beater engineers; machine tenders; back tenders.

We invite correspondence (confidential) with executives seeking positions and with employers seeking new personnel.

CHARLES P. RAYMOND SERVICE, Inc.
294 Washington Street, Boston, Mass.
J-22

TOUR BOSS: Experienced in Roofing and Flooring felts for Eastern Pa. Felt Mill, Cylinder Machine. Also:

SHIFT FOREMAN: For new Roofing Saturator. Prefer unmarried man. Reply full details.

Box No. 50-304, care PAPER TRADE JOURNAL. J-29

SALARIED POSITIONS $3,500—$35,000

If you are considering a new connection communicate with the undersigned. We offer the original personal employment service (40 years recognized standing and reputation). The procedure, of highest ethical standards, is individualized to your personal requirements and develops overtures without initiative on your part. Your identity covered and present position protected. Send only name and address for details.

R. W. BIXBY, INC.
117 Dun Bldg., Buffalo 2, N. Y.
TF

WANTED—PAPER MILL CHEMIST

Mid-western mill wants Paper Chemist-Technologist of several years laboratory experience. College training in Pulp and Paper course preferred. Should be capable of supervision of small staff of technicians and paper testers. Give complete information on education, experience and salary desired in first letter. Address Box 50-247 care Paper Trade Journal.
TF

WANTED—Instrument and Scale Man for Paper Mill in New Jersey. Excellent chance for advancement for the right man. Address Box 50-295 care Paper Trade Journal. J-22

WANTED—Two Machine Tenders also two young men for wet end in board mill now operating in Central America. Should be in mid-twenties, preferably unmarried, some board mill experience. Good living conditions, excellent future. Address Box 50-311 care Paper Trade Journal. J-22

WANTED—Experienced Master Mechanic for small fourdrinier mill located in Southern New Hampshire. Address Box 50-310 care Paper Trade Journal. J-22

HELP WANTED

PERSONNEL SERVICE ASSOC., 115 State Street, Springfield, 3, Mass. Specialized Confidential Placement Service for the Paper and Allied Industries. Positions and men always available. Inquiries welcomed. J-22

GENERAL MANAGER Paper Mill. Fine specialty paper experience. Salary open. Send resume to Box 50-306 care Paper Trade Journal. J-29

PAPER ENGINEER — Outstanding man for research and development work on non woven fabrics, Southern location. Permanent position with excellent future. In replying, give full background of training and experience, also salary expected. Our employees are informed of this advertisement. Address Box 50-308 care Paper Trade Journal. J-22

CHEMICAL or ENGINEERING GRADUATE, about 28 to 35 years old with mill or technical board of paper experience, for Sales-service and marketing of well established sizing products. Applicant's headquarters preferably in Chicago Area, for traveling in Middle States, surrounding Lake Michigan. Excellent opportunity with nationally known company having country-wide manufacturing and office points. Write full qualifications and references including recent snapshots. Address Box 50-309 care Paper Trade Journal. J-29

SITUATIONS WANTED

PLANT MANAGER—Board and Paper Conversion; employed; seeks opportunity in company needing cost-minded executive with proven production record and excellent labor relations history. Address Box 50-233 care Paper Trade Journal. J-29

CHEMICAL ENGINEER B. S. — Young, Versatile. Development experience on new functional papers. Also technical executive and sales service background. Desires responsible position in Midwest Area. Address Box 50-279 care Paper Trade Journal. J-22

PRODUCTION MANAGER—Superintendent—capable of all supervisory functions—production efficiency—product quality—maintenance—active, progressive, cooperative—experienced on sulphite, fine, groundwood, machine coating, printing and converting specialties—knowledge of pulping and converting fields. Address Box 50-288 care Paper Trade Journal. J-29

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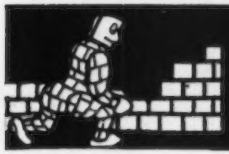

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Shartle Brothers Machine Co.
Waldron Corporation, John
Weber, Herman G., & Co., Inc.

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American Cyanamid Company Industrial Chemicals Division
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The Goodyear Tire & Rubber Company
Hercules Powder Co.
J. M. Huber Corp.
Monsanto Chemical Company
National Wax Co.
Nopco Chemical Co.
Wyandotte Chemicals Corp., Michigan Alkali Div.

COGS

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COMPOUND LATICES

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J. E. Sirrine & Co.
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The Brown Instrument Co.

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The Brown Instrument Co.
Johnson Corp.
Shartle Bros. Mch. Co.
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Ross Engineering Corp., J. O.
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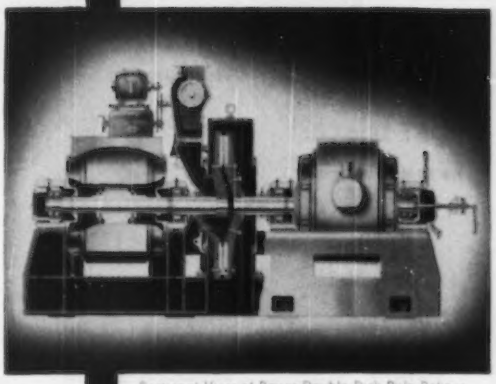

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Monsanto Chemical Company
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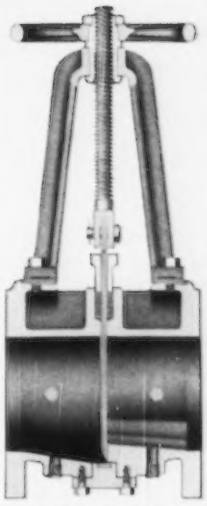

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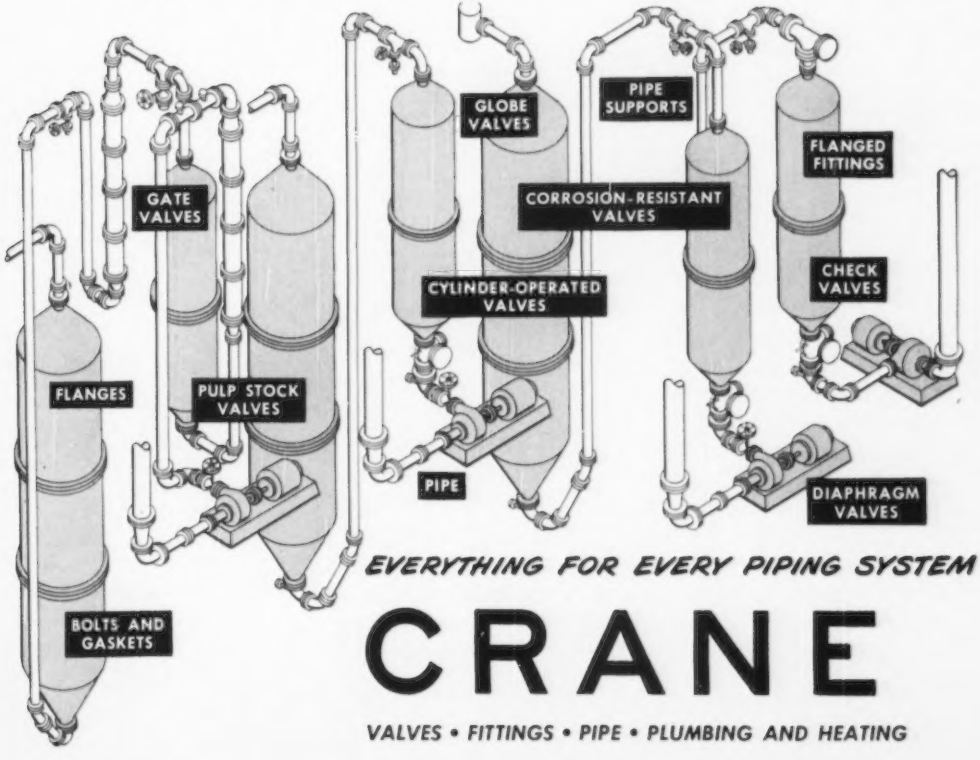

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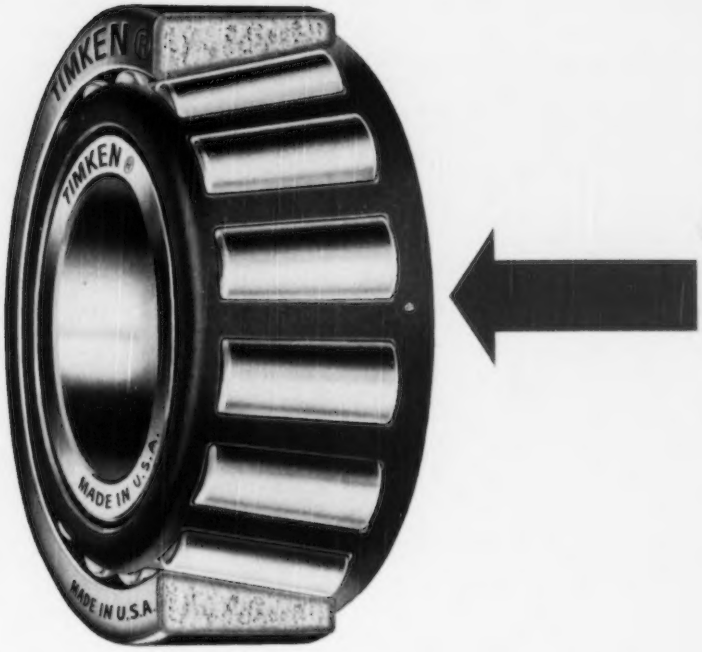

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